SOCIOMETRY

A Journal of Inter-Personal Relations and Experimental Design

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SOCIOMETRY

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GROUP CHARACTERISTICS AS REVEALED IN SOCIOMETRIC PATTERNS AND PERSONALITY RATINGS

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Historical Background of the Present Study

a. *Sociometric Theory and Studies*

The systematic investigation of group structure and the individual's place in it had its chief origin in the work of Moreno (16), first published in 1934. The basic work in the field by Moreno was followed by important researches on the part of other investigators. Newstetter, Feldstein, and Newcomb (22) applied sociometric techniques to a boys' camp and some other group situations, with particular attention to longitudinal studies of stability. Jennings (13) studied girls in a state training school by the application of sociometric techniques. Using the sociometric results, she did case studies of stars and isolates, attempting to determine their personality characteristics, and made a number of observations about them. Jennings made, however, no systematic attempt to relate personality and status on any level other than clinical. Hunt and Solomon (12) found several significant correlations between personality traits and group status in a summer camp of boys of 5 to 8 years; because of the age of their subjects these authors used the ratings of counselors as the basis for the personality data. Except for this study, and another which will be mentioned, the literature abounds with unsuccessful attempts to find personality correlates to group status. However, Northway (20) reported experimental findings which indicated that recessive children have generally very low status. This result is easily attributable to the fact that her definition of "status" was incomplete, since it was based entirely on choices and not rejections. As the present study will show, when status is measured more inclusively, those with low status are by no means recessive. Northway made an important distinction between "acceptibility" and "acceptance," pointing out that the results of a sociometric test do not give a measure of acceptibility in general for each individual, but only of acceptance in that particular group.

The term "status" as used in this study, following Ogburn's definition, "represents the position of the individual in the group. . . . A person's status

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is his group standing, or ranking in relation to the others" (23, p. 306). Since only one affiliation is dealt with, i.e., membership in a living group, only one of the subjects' many statuses is considered. We shall, therefore, use the term "status" with this reservation in mind, so that when we speak of an individual's status we mean only his status in the particular group investigated; we have no clue to his social status in any other group or in general, if such exists. Northway also remarked that one reason for the difficulty in finding correlates to group status is that the low end of the sociometric curve included two distinct kinds of personality patterns: those who received no choices because they were ignored and unnoticed, and those who received no choices because they were strongly disliked. In this study an attempt is made to overcome this difficulty. Northway and others have often made general characterizations of leaders or stars, either from clinical studies or from personal observations, and one reads that leaders are "vivacious" or "sympathetic" or "insightful" (21). Some evidence will later be presented which suggests the incorrectness of at least some of these characterizations.

b. Sociometric Methods and Techniques

Soon after the appearance of Moreno's basic work, attention was given (18) to methodology in sociometric research. Moreno and Jennings (17) were responsible for the first work in this area, studying deviations from chance expectancy, and their paper was notable for the stimulus it provided. It postulated that real differences existed between chance and actual choices. Many contributions to technique have been made by Criswell (5, 8), particularly in relation to indices of self-preference and group integration. The techniques she developed may be criticized on two grounds. Her indices of group integration are based on the frequency of reciprocated choices within the group, which as we shall see later, is a questionable basis for the measurement of group cohesion. Her indices of in-group preference take into account only the size of the sub-group, and do not allow for the fact that other factors besides size may determine the *expected* frequency of in-group choices. These same problems have also been attacked by Smith (27), Zeleny (31), and others, but Criswell's work has to date been the most interesting in this area.

A highly important work in the field of quantitative technique has been done by Bronfenbrenner (3). He introduced for the first time a complete method for making sociometric comparisons from group to group, as well as a method for identifying and describing levels of significance. He pointed

out, for example, that in comparing "stars" in different groups it was necessary to consider in each case just how unusual the reception of such a large number of choices was in terms of chance expectancy. Two individuals in different sociometric situations each receiving the same number of choices are not necessarily equivalent, since the probabilities of their receiving that many choices may be different for the different situations. Bronfenbrenner's aim, therefore, was a "constant frame of reference" in addition to a means of identifying statistically significant departures from chance. He worked out a method for determining the probability of receiving any number of choices, or, more accurately, of receiving any number or fewer and any number or more. He thus provided a continuous measure of status in terms of deviation from chance expectancy.

The fact that construction of a sociogram allowed for variation in the judgment of the constructor, and that given the same set of data two workers might well construct entirely different sociograms, stimulated efforts to devise more rigorous ways of representing sociometric data. Forsyth and Katz (10) and Katz (14) developed a matrix approach to the representation of such data, which solved the problem of standardization through various manipulatory rules for canonical forms.

Probably the biggest single gap in the literature on sociometric technique has been the failure to find a measure of social status that utilizes rejections as well as choices. Smucker (28) used rejections as a means of measuring group tension, and Jennings (13) also used rejections, but kept the results separate from the choice results. A more accurate picture of group structure and individual social status *should* be obtainable if both choices and rejections are considered. They have been combined in building sociograms, so as to represent pictorially the direction of choices and rejections, but they have not as yet been combined to yield a broader-based *quantitative index of status.*

c. Rating Scales and Sociometry

The experimental combination of rating scale data and sociometric data is relatively recent. Part of the foundation for this combination was laid by Sears (26) in a study of the operation of "projection" as revealed by rating scales; he found associations between "projection" and "insight," such that subjects who had insight into their own possession of a trait were less likely to "project" it upon others than were those who lacked such insight.

Some of Sears' results were questioned by Rokeach (24), who worked

with a "beauty" scale and found little evidence for the operation of projection. The question of association between projection or insight and sociometric status has not been raised, but it seems pertinent in view of the fact that individuals with high status are often presumed to have good insight.

Sociometric studies of college groups have been done by Vreeland (30), Lundberg (15), and many others, although college students have not been the subjects for most sociometric tests. The only research which has attempted to combine sociometric and rating data has been that of French and Mensh (11), which at the time this study was performed had not been published, and which therefore did not come to the attention of the writers when the present study was in its planning stage. French and Mensh's subjects were a single college sorority, and these writers found some relationships between personality and status; however, they measured status by inspection of the sociogram and not in any systematic way that could be repeated uniformly by other researchers.

All studies of college groups have been confined either to fraternities and sororities or to very large dormitories. It seems likely that neither of these is representative of group behavior in general, since in the former the system of entry is unique and in the latter it is not possible for every individual to know every other individual well. There is, therefore, a need for studies of reasonably small groups who do not select their own members but who have been arbitrarily thrown together and have come to know each other very well; this is one type of "real-life" situation.

STATEMENT OF THE PROBLEM

A consideration of the historical background of sociometric work suggests three areas which require continued attention. These are: (1) A need for more rigorous methodology, which may be described and hence repeated uniformly by other investigators, and which can be applied to those areas which so far have resisted measurement; (2) A need for studies which relate the individual to the group, and which investigate the associations between personality characteristics and social status; and (3) A need for inquiry into group structure and function as such, with attempts to generate hypotheses about structure and function, and with emphasis on empirical verification.

The present study is aimed at these needs. It differs from the customary study (sociometric or otherwise) of groups in that its aims are not primarily the understanding and analysis of a particular group or set of groups (in

terms of, e.g., cliques, mutual choices, and other aspects unique to the groups studied), but rather a more general inquiry into certain aspects of the nature of group structure and function. Since most of the phenomena investigated here have not previously received detailed attention, it was necessary to work out new approaches and techniques for analyzing them.

The problem was, therefore, to undertake exploratory research in groups óf moderate size; to consider the relationship between personality data obtained from rating scales and sociometric data obtained from a sociometric test; and to examine, by means of reproducible methodology, the patterning of choices and rejections and their relation to other characteristics of group structure.

PROCEDURES

a. Designing a Questionnaire

The first step in this study was the designing of a questionnaire which would furnish the necessary personality ratings and status indices. It had been decided that the questionnaire should consist of two parts, one based on information from personality ratings scales and one based on sociometric material. There were, therefore, two separate areas of planning, each ruled by different considerations.

In designing the rating scales, several ideas were suggested by what appeared to be weaknesses in Sears' experiment (26). The first was his practice of attaching a descriptive phrase to each of the seven points on his rating scales. This seemed an unnecessary practice for several reasons. The descriptions are not likely to "mean" the same thing to all people. Furthermore, some of them do not seem to belong on a continuum of the trait in question: "rather easy-going," for example, would be difficult to identify out of context; actually it is the description attached to the second point on the "generous-stingy" scale. Such a description probably adds to the ambiguity of the scale. By assigning specific kinds of behavioral descriptions to each point, Sears also permitted a situation whereby a true continuum might not be represented, and the result of this could be that some people would have trouble in placing others anywhere at all on the scale, if they have difficulty in thinking of that particular trait in terms of Sears' specific behavioral descriptions.

Together with the possible dangers of overdescription and consequent ambiguity, the complement danger is the other extreme of leaving the entire scale blank (i.e., merely labelling the scale at the extremes, and permitting every subject to decide what the numbers on it mean to him). Opinion in the

literature is generally against this kind of scale, and it was unfeasible here also because for statistical treatment the scale could not be continuous. Hence it was decided to use a semi-descriptive, seven-point rating scale for the traits to be investigated, with the points labelled as follows: 1. Extremely ———. 2. Much more ——— than average. 3. Somewhat ———. 4. About average. 5. Somewhat ———. 6. Much more ——— than average. 7. Extremely ———. Since all rating scales suffer from the differences in the absolute rating tendencies of individual subjects, the question of compensating for these by conversion into standard scores naturally arose.

Examination of Sears' scales raised a further question about them. Granting for the time being the point-by-point descriptions, their content nature seemed non-analogous from scale to scale. The first points on the stinginess scale were labelled as follows: "1. Generous, perhaps an easy mark. . . . 3. Sensible about use of possessions." The last point on this scale was labelled "very stingy." On the obstinacy scale, point 2 read: "agreeable to others' plans"; point 6 read: "anxious to have own way." On the disorderliness scale, point 1 read: "painfully neat, perfect order"; point 2, "finicky about details"; point 6, "pretty messy, untidy"; and point 7, "no attempt at order." It was noted that on the first two of these scales, the low-numbered points appeared to be labelled with language suggesting *high* social values ("generous," "sensible," "agreeable"), and the high-numbered points with language suggesting social *disapproval* ("stingy," "anxious to have own way"); while on the third scale, *both* low- and high-numbered points seemed to be labelled with qualities definitely not approved in our society ("finicky," "messy"). This observation led to the hypothesis that Sears had used two basically different kinds of scales, which might yield very different results. One kind of scale appeared to run from an extreme that is approved to an extreme that is disapproved, while the other seemed to run from a disapproved extreme through an approved middle area to a disapproved other extreme.

To see whether, in fact, there existed any basic difference between these two types of scales, and to decide which trait scales to use in this study, an informal pre-test was designed. After consideration of a large number of possible trait continua, the following ten were selected for pre-testing and subsequent weeding out:

    a. generous—stingy
    b. disorderly—meticulous
    c. dominating—submissive
    d. shy—bold

e. stubborn—yielding
f. timid—fearless
g. enthusiastic—apathetic
h. affectionate—cold
i. excitable—placid
j. gay—melancholy

Effort was made to have the two ends represent sensible and opposite extremes, between which most people could reasonably be placed by those who knew them well. In the pretest, each of these ten traits was put on a seven point scale as described above, and 30 female subjects were asked to "Make a mark in one of the blanks provided in each [scale] at the number *where you would like to be rated by others.* That is, your mark on each [scale] will represent that point on the scale which you consider the most favorable rating." This pretest had two objectives: first, to eliminate ambiguous or otherwise unsatisfactory scales on which people might not agree on the points of greatest and least desirability, and which would therefore make consensus less meaningful; and second, to test the hypothesis that there are two fundamentally different kinds of rating scales, one kind which goes from a "Good" extreme to a "Bad" extreme, and another kind which goes from a "Bad" extreme through a "Good" central area to a "Bad" other extreme. Such an hypothesis was confirmed:[1] three of the scales were of one type and three were of the other type.

In order to distinguish between the two types of scales, the three scales which run from "good" to "bad" (generous—stingy, enthusiastic—apathetic, affectionate—cold) are hereafter designated as the Alpha scales, this term also being used to refer to any similar rating scale running from "good" to "bad" extremes; and the three scales which run from "bad" to "good" to "bad" (dominating—submissive, shy—bold, stubborn—yielding) will be referred to as Beta scales in the rest of the report. In accordance with the

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[1] Since the pretest was intended only to be indicative, a small number of subjects was used with the expectancy that if the results seemed unclear more would be added. The results after thirty subjects, however, seemed to give all the information which had been desired, and no further pretesting was done. These results were plotted in frequency distributions whose graphs offered fairly convincing evidence that *two* different kinds of scales are being used. On scales *A*, *G*, and *H* the concentration is clearly in the left half of the distribution, indicating that for most people one end of these scales is much more desirable than the other end. On scales *C*, *D*, and *E* the concentration is very well centered, and both ends of these scales are evidently undesirable. These six scales show fairly good agreement, more than scales *B*, *F*, *I*, and *J*; hence it was decided to discard the last four, and to make use of the other six in the study itself.

exploratory nature of the investigation, no formal hypotheses were formulated about the specific differential performances expected of these two different kinds of scales. The plan was simply to use them with awareness of their difference, and to observe the results of this difference (if any) in various parts of the study.

In preparing the sheet calling for sociometric data, a number of considerations were involved. The first question to be decided in making up the sociometric questionnaire was that of the number and nature of criteria to be used. Sociometric criteria refer to the different areas of choice (or rejection) that may be allowed, i.e., the context in which the subject is asked to choose other individuals.

Among school children, the "sit next to" and "play with" criteria are the ones most generally used. There are social and mathematical reasons for using more than one criterion, especially when the experimental group is adult or near-adult. The mathematical reason, which will be more fully developed later, is chiefly the multiplication of the binomial exponent by the number of criteria, permitting more sensitive analysis. The social reasons, however, are the chief considerations, and they have the same goal as the mathematical reason: that of more sensitive and accurate analysis. Multiple criteria broaden the base for acceptance or rejection. Probably no single criterion could yield a completely meaningful measure of social status, because it would only measure status with respect to that particular criterion; that is, it would show specifically who would be the most popular roommate, but rooming preference constitutes only a single dimension of that vague entity we call status. If this reasoning is carried to its logical end, it follows that status can be measured accurately only when the number of criteria approaches the number of adjectives which can modify personal nouns; but the point of diminishing returns practically speaking, is of course not very high. The most common number of criteria in current sociometric work is three. However, the use of two or four criteria is not unusual, and for this study the following four were chosen: (1) Choice of roommate. This was selected as being indicative of personal compatibility. (2) Choice for double-dating companion. This was included as a measure of social acceptability in a hetersexual age-group situation. (3) Choice to take home for a weekend with one's family. This was aimed at social acceptability in a family or home situation, and the chain of criteria that implies. (4) Choice to be friendly with after graduation from college. This was taken from another writer (15) because it seemed to cover a rather wide time orientation for choice. The idea behind the use of multiple criteria is,

of course, the realization that the measurement of social status must take into account as many different components or dimensions of status as possible; and this selection of criteria was aimed at what appears to be the most reasonable basis for status. However, this aspect of sociometry is still in the guess work stage, and there is not assurance that these are the most useful criteria for measuring status.

After deciding on the number and nature of the criteria, it was necessary to consider whether to ask for negative choices (rejections) as well as positive ones (i.e., asking subjects to name those they dislike or would least want to room with, for example). Much less work has been done with rejections in sociometric research than with choices. Apparently no work has been done systematically using both choices and rejections.[2] It was felt that this constituted a serious gap in knowledge, and it was hoped that measures of status could be worked out which would take into account both choices and rejections. With this objective in mind, rejections were judged as a valuable part of sociometric data and hence were requested on the questionnaire under each criterion.

The final consideration in planning the sociometric part of the experiment was whether to require a certain number of choices and rejections from each person, and if so, how many. On this question opinion has generally been divided. The advocates of unlimited choice and rejection point out that their method will yield a "truer" sociometric picture of the group, since people will choose only those they really feel positive towards, and will reject only those they actually dislike or reject; whereas if the experimenter arbitrarily requires a certain number of choices and rejections, and limits each subject to those, some subjects will have to mention people they really do not choose or reject in order to name the required number, and others must omit people towards whom they have "clearcut feelings." There is really no answer to this position, as long as the object of the study is a qualitative and rather subjective evaluation of a group, which might well be the case, for example, in a nursery school or other situation. The present study, however, is concerned with several different groups, and is also concerned with contributions to technique through quantitative methods; and for these reasons it was necessary to require from each person a fixed number of choices and rejections (three is customary) under each criterion. The mathematical manipulation of the sociometric data would have been im-

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[2] Jennings (13) and others have obtained rejections but have not used them as they will be used here.

possible if this artificial restriction had not been injected; it is hoped that the results justify what some may feel is a distortion of the true group picture. The basis for status indices will be number of choices (or rejections) received, rather than number of persons choosing (or rejecting), since the former has been shown to have greater variability and hence is probably a more sensitive indicator of status.

A ranking order of choices and rejections was requested on the questionnaire, but was not made use of in the analysis of the data. Only one writer has attempted a weighting method (21), and with questionable success. One difficulty would be in deciding how much weight to attach to each choice or rejection. It is also doubtful that such shadings of intensity would retain any significance throughout the processing of data; and furthermore, the doubt may be extended to the original meaning, in terms of social significance, between a first, second, and third choice. A weighting method would greatly complicate the statistical aspects of the analysis; and finally, it seems doubtful that the study of group behavior has reached a sufficiently advanced stage where such refinements are valuable.

It was concluded, then, that the questionnaire should contain six rating scales, on which the subjects were to be asked to rate their associates and themselves, and should further ask the subjects to make three choices and three rejections from among their associates under each of four sociometric criteria.

The questionnaire in its final form was administered in three "off-campus" dormitories (at "X" College), which contained 21, 17, and 20 girls, respectively, and whose members had lived together for at least four months and could be presumed to know one another reasonably well. Permission to give the questionnaire to the girls in these houses was obtained from the college administration, with the proviso that such permission did not carry with it official endorsement of the research, and that the questionnaire could only be given if the girls were willing. They were quite willing, and were interested in the aims of the study, some of which were afterwards explained to them. They were promised that when the research was completed they would be informed of the general findings; and this was done accordingly.

ANALYSIS OF RESULTS

a. *Preliminary Remarks*

Since much of the emphasis in this study was placed on the development of research techniques for the study of groups, and since a number of

the methods used are new, it was felt advisable that every step in processing and analysis should be spelled out carefully in order to make clear exactly what was done and why it was done. This naturally results in longer exposition of procedure than is customary, and parts are perhaps oversimplified; but it is probably better to run the risk of over-exposition than of insufficient clarity, and careful attention to this aspect of research is particularly needed at the present stage of the field.

In the discussion and interpretation of results, it is of course understood that any conclusions drawn are not necessarily applicable to the general population, but are strictly confined to generalizations about the groups studied here, i.e., three groups, with approximately twenty members each, containing female students between the ages of 18 and 21 at an Eastern college, who had been living together for at least four months. Insofar as these groups are at all representative, some of the conclusions reached *may* be valid for similar groups; but no such extrapolation is explicitly made, and the results can only be regarded as tentative, pending further research. This qualification of all the conclusions having been made at this point, it will not be repeated, and the findings will be stated as generalizations with the understanding that they are intended, for the time being, to apply only to the groups studied.

b. *Processing of the Data*

The sociometric data for each house were first put into matrix form, and these three matrices will be found in Table I. The numbers running down the left side of the matrix denote individuals in their capacity as *distributors* of choices and rejections, while the numbers running across the top denote the individuals in their capacity as *receivers* of choices and rejections. Thus, if one is interested in the choices or rejections *given out* by any individual, one looks in the *row* by her number; if one is interested in the choices or rejections *received* by any individual, one looks in the column under her number. Plus signs denote choices, and ciphers denote rejections; blank spaces hence denote no mention. In each box of the matrix there could be as may as four marks, if one individual chose or rejected another under all four criteria.

The positions of the marks in each box indicate which criteria they represent. If a plus sign or a cipher is in the extreme left of the box, this refers to criterion 1 (room with); if the mark is left of the center of the box but not in the lefthand corner, this indicates criterion 2 (double dating); and correspondingly on the right for the last two criteria. Each row must

TABLE I

Sociomatrix for House A

Choices and Rejections *Received*

Choices and Rejections *Made*

TABLE I (*continued*)

SOCIOMATRIX FOR HOUSE B

Choices and Rejections *Received*

Choices and Rejections *Made*

TABLE I (*continued*)
SOCIOMATRIX FOR HOUSE C

Choices and Rejections *Received*

Choices and Rejections *Made*

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contain 12 plus signs and 12 ciphers, since each individual was required
to make three choices and three rejections under four criteria. Each column
contains no fixed sum, of course, because the number of choices and rejec-
tions received varies; but the sum of the sums of the columns must equal
12N choices and 12N rejections, where N is the number in the house, since
those are the totals given out and hence the totals received.

The matrix was selected as more appropriate than the sociogram for
visual presentation because the analysis of the data will not be visual in
this study, and the matrix is not used here as an end in itself but only as
an intermediate step in the processing of the sociometric data. The matrix
also shows how intense any reaction of one individual toward another is
(the more marks in the box representing that reaction, the more intense
the reaction).

The matrix does not indicate the composition of cliques and subgroups,
nor does it reveal immediately mutuals, chains, and other characteristics
which the sociogram might reveal, but for the purpose of this particular
study these aspects do not concern us.[3] As stated previously, the construc-
tion of a matrix is an intermediate step in the processing of the sociometric
data. From it is drawn up the choice and rejection scores for each indi-
vidual. This is first done for each criterion, and then the choices and
rejections under all criteria are added together, giving a total choice and
rejection score for each individual. The last two columns, containing the
totals, are the basis for all subsequent analysis of the sociometric data.

These sociometric scores are the raw material of status, as it has been
defined here, and the problem now is how to utilize these scores to obtain
a measure of social status. Most methods have a serious failing: they cannot
be used in comparisons from house to house. All they tell us is which girls
stand high and which stand low *in each house*. They do not permit any
comparison between top and bottom groups, nor can we meaningfully pool
data from several houses using any of these methods because there would
be no assurance that all the girls in, say, the top status group were really
equivalent in any way. We would merely know that they are all top *ranking*
girls in their respective houses, but this says nothing about their *absolute*
status and hence they cannot be equated with girls from other houses.[4]

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[3] By manipulating the matrix according to the methods of Forsyth and Katz (10),
we could extract this information from it, but as we are not at present concerned,
the matrix has been left in its original form.

[4] It may sound foolish to speak of "absolute" status when status has already been
defined as status in a particular group; but by "absolute" is meant a basis for com-

We need, therefore, a constant frame of reference which will isolate top and bottom groups by establishing limits which are independent of the sociometric structure itself, but by which that structure can be measured. Such a frame of reference is supplied by Bronfenbrenner's concept of deviation from chance expectancy, and the tools he furnishes will therefore be the basis for our next steps.

The objective which we seek to attain by using Bronfenbrenner's techniques is to discover how many choices an individual must receive in order for it to be said of him that he received significantly more choices than chance alone would predict; and also how few choices he must receive in order for us to say that he received significantly fewer choices than chance would predict. Let us adopt, arbitrarily, a 1% level of confidence, and say, therefore, that we wish to establish limits such that the probability of an individual receiving X or *more* choices is .01, and the probability of an individual receiving Y or *fewer* choices is also .01.

Now, if $d =$ the number of choices allowed each person per criterion, and $N =$ the number of individuals in the house, the probability that any individual will be chosen by any other individual is given by:

$$P_c = \frac{d}{N-1}$$

The denominator is $N-1$ because an individual cannot choose himself. The probability of not being chosen is of course the complement,

$$q_c = 1 - p_c$$

Now if there is only one criterion of choice, the successive terms of the expansion of the binomial

$$(q + p)^{N-1}$$

will give the probability that any person will be selected by chance 0, 1, 2, . . . times, up to $N-1$ times, which is the most times an individual could be selected (i.e., under one criterion, selected by everybody in the house). In this study four criteria were used, and this expression must therefore be modified accordingly. Since we intend to use as a basis for status indices the total number of choices *received* rather than the number of persons choosing, the probability of being chosen remains the same,[5] because one

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parison of individuals in different groups, and any rank ordering within groups precludes this.

[5] I.e., it becomes 4d / 4(N—1), and by cancellation reduces to the original probability.

individual can choose another only once under each criterion. But the effect of the additional criteria will be to multiply by 4 the number of choices which an individual could possibly receive. Since that figure is the exponent in the binomial expansion, the revised expression becomes

$$(q + p)^{C(N-1)},$$

C being the number of criteria, 4 in this case. In House A, then, the binomial to be expanded is:

$$\left(\frac{3}{20} + \frac{17}{20} \right)^{80}$$

The successive terms of this expansion will give the probability of being chosen 0, 1, 2, up to 80 times. But we are interested in cumulative probabilities—that is, not the probability of being chosen exactly X times, but of being chosen X or more times, or Y or fewer times. Therefore we require sums of successive terms of the expansion. Since it would obviously be a prohibitive task to calculate and add all 81 terms of this binomial, some method of approximation must be found.

The customary recourse to tables of areas under the normal curve is not permissible here because of the skewness of the distribution resulting from the fact that p does not equal q. Tables of the normal curve are valid only when p is nearly equal to q, in which case the skewness is nearly zero. In sociometric situations, p is not likely to be near q, since this would require that the probability of being chosen would equal the probability of not being chosen, and this in turn would require that d, the number of choices allowed each person, be equal to N—1 / 2. This means that in order to eliminate skewness and be able to use tables of the normal curve, each individual must be required to distribute almost half as many choices as there are people in the group, which for any fairly large group is obviously unfeasible. Hence some other method of approximation must be sought. Bronfenbrenner suggests for this purpose the use of Pearson's Type III function, whose ordinates and areas have been tabulated by Salvosa (25). He shows, by comparison with actual computed values, that this curve yields excellent approximations for the sums of the binomial expansion, and particularly when the exponent is large, as it is in this situation.

Since Salvosa's tables are already tabulated in standard units, it is only necessary to convert raw choice scores into t-scores on the theoretical distribution and then look under the appropriate skewness for the corresponding probabilities. To do this we need to know the mean, the standard

deviation, and the skewness of the theoretical distribution; the customary formulas are employed.

$$M = np \quad [n = 4(N-1)]$$
$$\sigma = \sqrt{npq}$$
$$\alpha_3 = \frac{q-p}{\sigma}$$

Then the standard score for any probability, t, is $x-M\,/\,\sigma$, where x is the limit (upper or lower, depending on which end of the curve is desired) of the interval wherein the raw score value lies (e.g., if the raw choice score is 8, the upper limit is 8.5 and the lower limit 7.5). In this way a standard score for each cumulative choice frequency may be obtained, and the Salvosa tables will give the required probabilities for receiving that many choices or more, depending on which end we start from.

Bronfenbrenner's method, therefore, gives a continuous measure of probability in terms of the deviation of any raw choice score from chance expectation. For our purpose it is not necessary to compute all these probabilities, since we desire merely the fiducial limits of .01 at either end of the curve. To discover these let us rearrange the above standard score formula so that it reads

$$x = t\sigma + M,$$

x being the value we seek. Now having calculated σ and M for the distribution, we need only the value of t which corresponds to .01 probabilities at either end. Therefore we locate, in Salvosa's tables, under the appropriate skewness, the t-scores which are required for these probabilities. This gives us two values for t, one plus and one minus, which we can now substitute in turn in the above equation and get x, since M and σ were already computed.

These fiducial choice limits were computed for all three houses. Because of the similarity in size of the houses (21, 20, and 17 respectively), it was found that after the x's had been rounded off to the nearest whole number they were the same for the three houses. The results of these operations showed that in any of the houses a girl would have received 19 or more choices only 1% of the time by chance, and would have received 5 or fewer choices only 1% of the time. These, then, are the critical scores which will be used to divide the girls into groupings. They have been calculated on the basis of deviation from chance expectancy, and provide highly significant limits as well as a constant frame of reference from house to house: all

girls whose choice scores lie at or beyond these limits are significantly high or low in choices received, and equivalently so.

Up to now only choices have been considered. But there are additional sociometric data in the form of rejections received by each girl. Since the mathematical considerations governing rejections were exactly the same as those governing choices (i.e., C, d, N, p, and q are the same for choices and rejections), the same operations may be carried out with regard to rejections, and the same results will be obtained: a girl would receive 19 or more rejections only 1% of the time by chance, and would receive 5 or fewer rejections also 1% of the time by chance alone. Hence we now have two ways in which to order the subjects: they may be grouped by choices or by rejections. Each way will yield three groups of girls: those receiving a significantly large number (of choices or rejections), those receiving a significantly small number, and the remainder, who did not differ from chance beyond a probability level of .01 in either direction.

It was immediately noticed, however, that the membership of the choice groups did not exactly correspond with that of the rejection groups. In general, of course, there was some tendency for people who received many choices to receive few rejections, and for people who received many rejections to receive few choices. But there was considerable overlapping, and the membership of Choice Group 1 did not correspond to the membership of Rejection Group 3; nor did Choice Group 3 correspond exactly to Rejection Group 1. The dilemma arises, therefore, as to which grouping should be taken as the overall status grouping.

More accurately the question is not whether the choice distribution *or* the rejection distribution gives the better measure of social status; it is reasonable to hold that *both* are pertinent to status, and hence the problem becomes one of technique rather than policy. We must devise a method, based on the chance limits, which will measure status by taking both choices and rejections into account. Since the literature is almost barren on this point, a new approach must be found.

Let us begin by recognizing that the social status of an individual, in the sense that term is used in this study, is the result of the reactions of others to her. Our task is to combine these reactions in such a way as to obtain an acceptable ordering of status groups. Now what are the possible reactions of one person toward another? There are three, not two of them: choice, rejection, or no mention. That is, the reaction of individual N_1 to individual N_2 may be such that N_1 entertains a positive affect toward N_2, and hence will choose her; or N_1 may feel negative toward N_2 and hence

reject her; or N_1 may not feel strongly enough either positively or nega-
tively, toward N_2, in which case she will not mention her at all on the
sociometric test, and we can say then that N_1 is "indifferent" to N_2. Now,
of course there are limitations to this way of categorizing all reactions, and
it may well be argued that because of the arbitrary requirement that each
individual make exactly three choices and three rejections, it cannot be
assumed that the fact that N_1 neither chooses nor rejects N_2 indicates that
she is indifferent toward N_2; it may mean that she actually entertained
rather strong positive or negative affect for N_2 but because she could only
choose or reject three individuals she had no opportunity to indicate her
true reaction toward N_2. This weakness in the meaning of "indifference"
must be recognized but it is not sufficient to prevent us from saying, in
general, that if N_1 neither chooses nor rejects N_2, she is relatively indifferent
toward her.

The first step then, is to compute for each girl a third reaction score,
which will be called an indifference score, in addition to her choice and
rejection score. This must be a *derived score,* unlike the choice and rejection
scores which were asked for directly on the sociometric test. To obtain the
indifference score, we must first determine how many total reactions each
individual received. Any individual reacts to any other individual once
under each criterion: that is, in answering the question "Who would you
like to room with" every girl either chooses, rejects, or does not mention
every other girl. If there were only one criterion, it would follow that the
total reactions any girl received would be one less than the number in
her house, since she cannot react to herself. We could then partition the
total number of reactions received (which is the same for every girl in a
particular house) into choices, rejections, and "indifferences." The indif-
ferences score is found by subtracting from the total possible reactions the
choices and the rejections that individual received; the remainder is her
indifference score. With multiple criteria, the total reactions per girl is
the number of criteria times one less than the number in the house, i.e.,
$4(N-1)$. Since the choice and rejection scores for each individual have
already been computed, to find her indifference score the sum of her choices
and rejections is subtracted from $4(N-1)$.

This procedure furnishes a third distribution upon which the subjects
may be ordered. Using the same methods as were used on the choice and
rejection distributions, one may ascertain the probability of receiving an
indifference reaction as follows: the probability of being chosen is $d / N-1$.
The probability of being rejected is similarly $d / N-1$. Since the proba-

bility of being reacted to in any way is 1, it follows that the probability of receiving an "indifference unit" is 1 minus the probability of being either chosen or rejected, or

$$p_1 = 1 - \frac{2d}{N-1}, \text{ or } \frac{N-1-2d}{N-1}$$

$$q_1 = \frac{2d}{N-1}$$

By following the procedure previously described, the lower and upper limits for 1% significance on this distribution may be calculated, and these are: for House A, 47 and 65; for House B, 31 and 49; for House C, 43 and 61. For each house these limits are then subtracted from $4(N-1)$, which will equate them all to 15 and 33. This means that any girl who was mentioned (i.e., chosen or rejected) 15 times or *less* would not have been unmentioned to that extent one time in a hundred by chance alone; and a girl mentioned 33 times or *more* would only have been mentioned so often 1% of the time by chance alone. This is the third aspect or dimension of status. The girls beyond the lower fiducial limit of this distribution may be said to be relatively unnoticed, "colorless," or "wishy-washy"; they made a relatively smaller impression on their housemates. Those beyond the upper limit were very highly noticed, relatively colorful, or striking, and had probably made some relatively strong impression, good or bad, on their housemates.

Social status has, as we have defined it, three components or dimensions, and individuals may be described in terms of their position in the choice, rejection, and indifference distributions. These three may be thought of as coordinates, or axes, at right angles to each other, like any other three-variable scheme, and each person could be plotted as a point in space according to the values associated with her on the three axes.

This way of looking at social status may not seem to be very helpful, since the existence of three variables instead of two ordinarily renders any actual plotting impossible, and hence we are apparently no closer to an actual representation of social status than before. This would be quite true except for one very important fact in this particular situation: our three "variables" are *not independent* since, by definition, their sum for any individual must be constant (i.e., $4(N-1)$). Therefore, although there are three legitimate coordinates there are only two degrees of freedom, and this has the notable consequence that *a plane* describes the locus of all points in space which satisfy these conditions.

The value $4(N-1)$ on each axis represents the vertices of the triangular plane CRI which contains all points the sum of whose coordinates is $4(N-1)$. Hence it is possible to remove this triangle from the three-dimensional setting and plot the position of every girl on it. Since there remain three coordinates, even though they are now represented in two dimensions, ordinary graph paper is not suitable for this purpose. Fortunately, however, such paper has certain uses in chemistry and may therefore be obtained from any supplier of scientific materials.[6] Since the three dimensions of status had the same characteristics and significant limits in all three houses, the data may legitimately be pooled and all subjects plotted on a single sheet, as has been done in Figure 1. This graph is inspected as follows. The page should be held so that the triangle forms a pyramid. The side which runs from the apex down to the left is the Choice base line; the nearer any point is to that line, the *fewer choices* were received by the girl whom the point represents. The side which runs from the apex down to the right is the Rejection base line; the nearer any girl lies to it the *fewer rejections* she received. The side along the bottom of the pyramid is the Indifference base line; it has no fixed base because of the different sizes of the houses, but it provides a constant frame of reference if measurement is made from the apex of the pyramid, so that the nearer girl is to the apex the more indifferent people were to her, with regard to the questionnaire. It should be remembered that a person receiving, say, no rejections at all might fall anywhere up or down the right edge, depending on how many choices she also received. In plotting any individual's position on this graph, she will be moved away from the Choice base line as many units as she received choices; she will then be moved along the line (parallel to the Choice base line) which represents this number of choices until that line intersects the line (parallel to the Rejection base line) which represents the number of rejections she received. Since three lines meet at every intersection, the third line (parallel to the Indifference base) automatically denotes her indifference score. At this intersection a point is made which represents that subject.

Three sets of lines have been drawn on the graph in Figure 1. The lines, parallel to the Choice base line, represent the mean and fiducial limits of the *choice* distribution. All subjects who fall between the base line for

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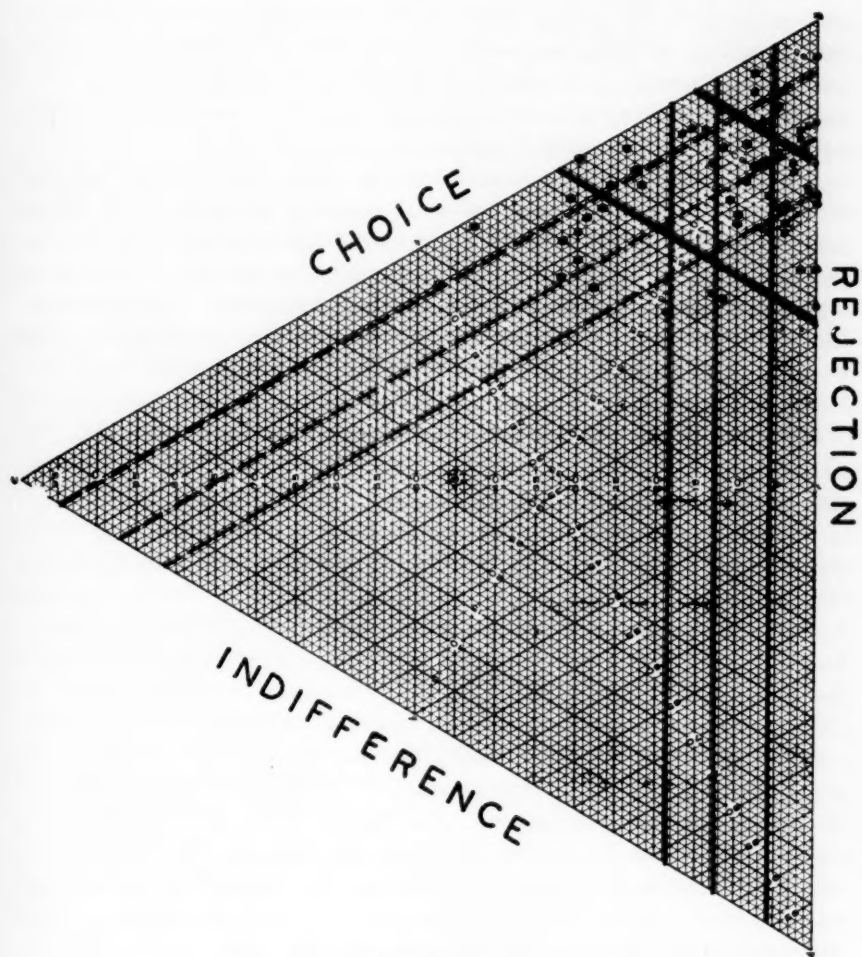
FIGURE 1
A Trivariate Scatter Diagram of Sociometric Choices and Rejections

choices and the nearest *broken line* parallel to it received so few choices
that such an event would not have happened by chance more than 1% of
the time. The middle broken line represents the mean. The broken line
farthest from the choice base line indicates the upper limit for choices, so
that an individual falling above that line received significantly more choices
than chance expectancy. It will be seen that these lines are drawn so as to
isolate those receiving 5 or fewer choices, and 19 or more choices, which
were the fiducial limits established for the choice distribution.

The *thin lines* are the exactly corresponding lines for the *rejection*
distribution. They are symmetrical with respect to the choice lines. Those
points lying between the Rejection base line and the first thin line represent
girls who received significantly few rejections, and those points lying above
the third thin line represent girls who received significantly many rejections.
The mean lines have been drawn so as to segregate those receiving the mean
or fewer from those receiving more than the mean. The two *heavy lines*
are the fiducial *indifference* limits. Those subjects falling between the apex
of the pyramid and the top heavy line were noticed significantly less than
chance would predict; those falling below the bottom heavy line were
noticed significantly more than chance would predict.

Inspection of this graph shows first that the probability levels of .01
on each end of the choice and rejection distributions segregated reasonably
large portions of the population, which is favorable for further analysis.
In fact, only 10 out of 58 subjects fell within the middle 98% probability
range for both choices and rejections: over 80% of the subjects fell outside
the upper or lower fiducial limits for either choices or rejections. Only three
girls ranked above both means. The graph shows further the non-corre-
spondence between the top choice group and the bottom rejection group,
and between the top rejection group and the bottom choice group. This can
be seen by observing that of all the 12 subjects falling above the significant
choice limit (broken line farthest from left edge) (i.e., the top choice group),
only 7 of them fell also below the significant rejection limit (thin line near-
est right edge); and of the 20 subjects who fell below the significant rejec-
tion limit, only 7 of them also fell above the significant choice limit. The
same holds for the high rejection and low choice groups.[7]

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[7] Interesting material for case studies could be obtained by singling out four
individuals for intensive clinical study: the girl represented by the point nearest the
choice line and farthest from the rejection line, who received one choice and 43 rejec-
tions (the girl with the lowest status of all the subjects); the girl who received 31
choices and no rejections (the girl with the highest status); the girl who received four

It is now possible to divide all the subjects into three arbitrary status groups for the purposes of further analysis. The two extreme status groups must demonstrate a significant degree of departure from expectancy, and we wish to make use of both choices and rejections in determining them. The very highest status group is clearly composed of those who received very many choices and very few rejections, i.e., the subjects represented by points falling above the fiducial choice limit and below the fiducial rejection limit.[8] Similarly, the very lowest status group is represented by those points which fall above the significant rejection limit and below the significant choice limit. Inspection reveals, however, that such a grouping would put only 7 individuals in the top status group and 6 in the bottom status group, leaving 46 in the middle group. Rather than work with such discrepancies, we seek a basis for groupings which will yield somewhat greater numbers in the extreme groups.

The following seems a sensible plan: let the high status group consist of all those who received significantly more choices than would be expected, and who at the same time did not receive more than the mean number of rejections; and let the low status group consist of those who received significantly more rejections than would be expected, and who at the same time did not receive more than the mean number of choices; and let all others not included in these two extreme groups make up the middle status group. Such a principle of grouping is based on the reasoning that a person receiving so many choices as to be significant at the .01 level really belongs in a top status group, as long as she did not also receive a large number of rejections, in which case her status would be less clearly defined and more ambiguous. Correspondingly, this reasoning holds that anyone receiving more rejections than a probability of .01 would allow for really belongs in a bottom status group, unless such a person also received a substantial number of choices too, which would make her assignment to a bottom group less incontestable. Figure 2 shows schematically which areas on the original graph correspond to these three status groups.

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choices and no rejections, represented by the point nearest the apex vertex of the triangle pyramid (the only girl who received both fewer choices and fewer rejections than chance would have predicted) ; and the girl who received 22 choices and 19 rejections (the only girl who fell above both the choice and rejection limits).

[8] In referring to the various lines of significance, if the word "above" is used in connection with a fiducial limit this always refers to the broken or thin line farthest from its respective base line, and the context will state whether choice or rejection is meant; if the word "below" is used in referring to a fiducial limit, this always refers to the broken or thin line nearest the base line to which it is parallel.
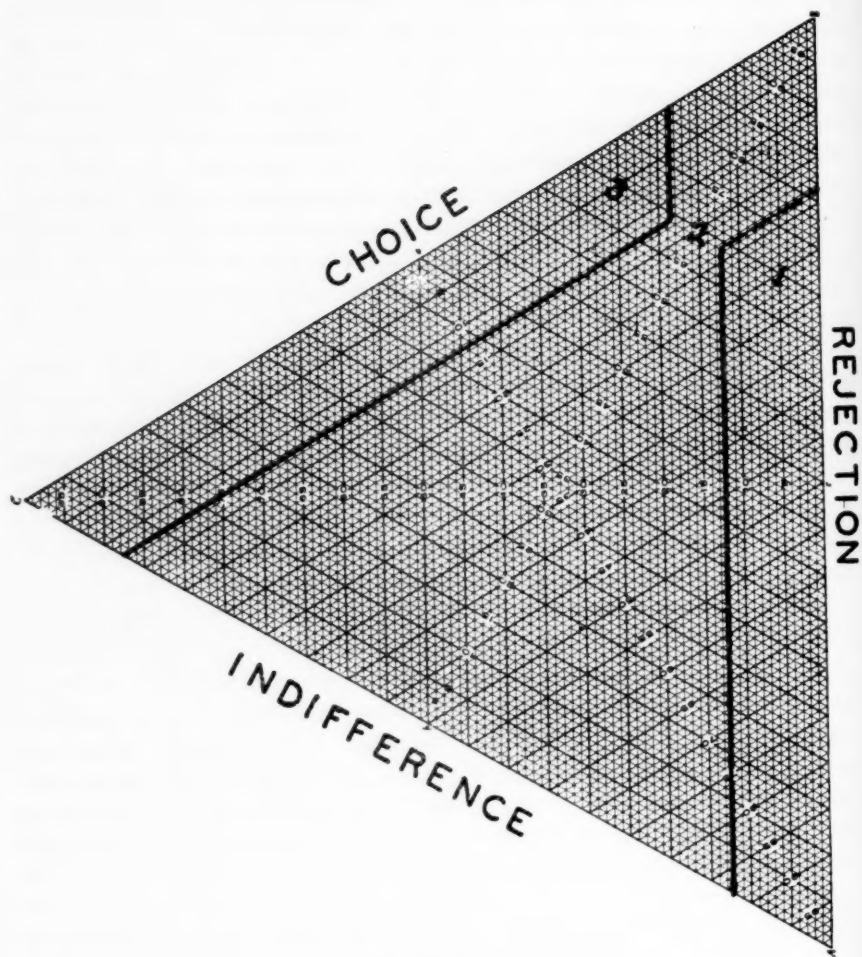
FIGURE 2
AREAS REPRESENTING THE THREE STATUS GROUPS

This basis for differentiating three status groups may not be free from all objection, but at least it meets most of the requirements that have been made here. It provides reasonably adequate numbers in each group (10, 35, 13); it represents a high level of significance for both extreme groups so that the terms "high status" and "low status" are statistically meaningful; and, finally, it allows for the pooling of data from house to house because members of the same status group are essentially equivalent, within the limits set up, no matter which house they are in. For these reasons it is suggested as an adequate method of measuring social status.

c. Status and Personality Ratings

The subjects have now been divided into three status groups, and it is now possible to perform tests which will determine whether these three differ significantly in certain respects. If status is not a factor in these respects, we will not be able to reject a null hypothesis that the three status groups are samples drawn from the same population with regard to the measurements being tested. Since the data from all three houses have been pooled, it will also be necessary to test for differences among the three houses, and to eliminate these differences from estimates of error. Furthermore, any variability due to the interaction of status groups with houses should be eliminated also. With a total of 58 subjects, there are 57 degrees of freedom, so the general design for the analysis of variance within our own data will be:

ANALYSIS OF VARIANCE FOR PERSONALITY RATINGS

Source of variation	Degrees of freedom
House	2
Status groups	2
Houses x status groups	4
Error	49
Total	57

The first question to be asked is: are there any differences between status groups with respect to mean personality ratings received on the various trait scales? The results of these six tests are given in Table II.

The values of F for scales I, III, and V are quite large, and highly significant, while the values of F for scales II, IV, and VI are much smaller, significant at the 5% level.[9] Here, then, is the first indication of the differ-

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[9] No individual t tests for pair of means were performed, since we are less interested in pair differences than in overall variability.

TABLE II

ANALYSIS OF VARIANCE OF MEAN RATING RECEIVED ON *Alpha Scales* BY HOUSES AND STATUS GROUPS　　ANALYSIS OF VARIANCE OF MEAN RATING RECEIVED ON *Beta Scales* BY HOUSES AND STATUS GROUPS

Source of variation	F	P	Source of variation	F	P
Scale I			*Scale II*		
Houses	.04	—	Houses	.23	—
Status groups	20.21	.001	Status groups	3.53	.05
Houses x status groups	.83	—	Houses x status groups	.15	—
Error			Error		
Means			Means		
Status group 1:	2.70		Status group 1:	3.27	
Status group 2:	3.25		Status group 2:	4.01	
Status group 3:	3.98		Status group 3:	3.71	
Scale III			*Scale IV*		
Houses	.01	—	Houses	.26	—
Status groups	11.58	.001	Status groups	3.57	.05
Houses x status groups	.66	—	Houses x status groups	.28	—
Error			Error		
Means			Means		
Status group 1:	2.50		Status group 1:	4.82	
Status group 2:	3.71		Status group 2:	3.88	
Status group 3:	3.98		Status group 3:	4.23	
Scale V			*Scale VI*		
Houses	.44	—	Houses	.28	—
Status groups	8.24	.001	Status groups	3.09	—
Houses x status groups	1.24	—	Houses x status groups	1.02	—
Error			Error		
Means			Means		
Status group 1:	3.20		Status group 1:	3.57	
Status group 2:	3.79		Status group 2:	3.91	
Status group 3:	4.20		Status group 3:	3.39	

ential performance of the Alpha and Beta scales. Further light is thrown on this difference by inspection of the status group means for each scale, in Table II. On the Alpha scales the means ascend in order, those for the highest status group (Group 1) being the lowest (i.e., nearer the "good" end of these scales) and those for status group 3 being the highest. On the Beta scales, however, no such linear progression is found; the means for the middle status group are either higher or lower than the means for both

other status groups. Results on Alpha scales show that there is a direct association between a person's sociometric status in her group and the rating she receives on a personality trait scale which runs from "good" to "bad." This is not a surprising finding, and is in partial accord with French and Mensh, who used trait scales which probably are Alpha scales, although no pretest was made.[10] However, their results, even when the F's are significant, are not as unequivocal as those in the present study because on several occasions their "middle" status group ranked lower on these scales than their "lowest" status group. This lends weight to the criticism already made of any impressionistic method of forming status groups. The present method does not depend on subjective evaluations by the investigator; furthermore, the present method gives a unidirectional trend for Alpha ratings received by the different status groups.

The finding of association says nothing about causality, and we have no evidence to indicate whether the demonstration by an individual of "good" traits brings her high social status, or whether the reverse sequence is true (although this is perhaps less likely). It may be that a general "halo effect" surrounding girls with high status causes them to be rated favorably on most traits. As in many other similar problems, inquiries into these questions by longitudinal tests in groups should help to throw light on the processes involved.

Let us now return to a consideration of the differential performance of the Alpha and Beta scales. The three status group means on each scale are given in Table II, with the Alpha scales on the left and the Beta scales on the right. The differences are quite evident; the Alpha means ascend linearly, while the Beta means exhibit a definite hump in the middle. As we inspect these plotted means, two questions naturally arise. The first is, why are both extreme status groups rated as "bad" (i.e., near the ends) and the middle status group rated as "good" (near the center) on the Beta scales? The second question is, what kind of grouping of the subjects would show a linear trend for these Beta scale means? The first question may be answered by considering the traits themselves: dominating—submissive, bold—shy, stubborn—yielding. Although in the eyes of the general college girl population these traits may be undesirable at both extremes, it is possible that leaders may be nearer the dominating—bold—stubborn ends when they are effective. This might account for the fact that high status girls are rated nearer these ends than are middle status girls. The other

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[10] E.g., fairmindedness, sense of humor.

half of the explanation—why low status girls are also rated near these ends—probably lies in the fact that it may be difficult for a submissive—shy—yielding girl to be so objectionable as to be placed in the lowest group. Passive individuals may not generally arouse strong antipathies. The results on these scales point to an interesting equality between the highest and lowest status groups.

The implication is that the Beta scales can be used to separate those girls with high and low status from those near the middle, but that the scales in no way discriminate between the two status extremes. Whereas the Alpha scales sharply differentiated the extreme status groups, the Beta scales equate them; the result is a picture of group structure in which on some traits status makes a difference, but on other traits high and low status meet; and this gives us a clue in answering the second question above as to what grouping would yield linearity of Beta scale means. We seek a continuum at one end of which are individuals with very high and very low status, and at the other end of which are individuals with moderate status. One of the characteristics of girls of moderate status is that not much attention is being paid them either way, while girls of exceptionally high or low status are evidently receiving a good deal of attention, although of a different nature. Hence it seems reasonable to think that perhaps the *indifference* continuum is the one we seek. Girls who go unmentioned in the sociometric ratings might fall near one end, and girls who were highly noticed (by choices or rejections) might fall near the other end. Recourse to Figure 2 shows that there are 12 subjects who fall below the noticeability fiducial limit; these girls received so little mention that the probability of such an occurrence was .01. There are also 12 girls who fall above the high noticeability limit; these girls received more mention than would be expected at the same probability level of .01. This gives us three "indifference" groups: one toward whom people were highly indifferent, one toward whom people were not at all indifferent, and a middle group who were neither very noticed nor very ignored. We can analyze the variance of these three indifference groups on the Beta scales, using the same design as we used previously for status groups. The results of these three tests are given, together with the means, in Table III. Two of the F's are highly significant, and the third, 4.99, is not far from the value required for a probability of .01 (5.06). The means are in linear order, as may be seen from Table III. Apparently, then, our second question has been answered with reasonably high confidence: the indifference groupings will yield means which are significantly different and which show no humps.

TABLE III

ANALYSIS OF VARIANCE OF MEAN RATING RECEIVED ON BETA SCALES BY HOUSES AND
INDIFFERENCE GROUPS

Source of variation			F	P
Scale II				
Houses			.28	—
Indifference groups			7.79	.01
Houses x indifference groups			.28	—
Error				
		Indifference group 1:	3.49	
	Means	Indifference group 2:	3.67	
		Indifference group 3:	4.54	
Scale IV				
Houses			.25	—
Indifference groups			4.99	.05
Houses x indifference groups			.25	—
Error				
		Indifference group 1:	4.41	
	Means	Indifference group 2:	4.27	
		Indifference group 3:	3.39	
Scale VI				
Houses			.35	—
Indifference groups			11.53	.001
Houses x indifference groups			.60	—
Error				
		Indifference group 1:	3.19	
	Means	Indifference group 2:	3.70	
		Indifference group 3:	4.37	

To summarize these results of analyses of mean personality trait ratings received, we have found consistently positive relationships between status and rating received on Alpha scales,[11] and between noticeability and rating received on Beta scales. It will be interesting to see whether these phenomena exist on all scales of the same nature as these two. It may be hypothesized that status differences will exist on any scale which has been verified to run from "good" to "bad"; one cannot, however, be sure that the noticeability differences on the Beta scales were due to the kind of scale or to the particular nature of the scales used in this study, which have one end

[11] In terms of personality correlates to group status, we may say that high-status girls are more likely to be rated as generous, enthusiastic, and affectionate than are low-status girls.

closely resembling the indifference groupings. This might be ascertained
by the use of a Beta scale, which had been empirically verified to run from
"bad" through "good" to "bad," but whose traits could not directly be
linked to noticeability. It was a weakness of the Beta scales used in the
present study that they were not unequivocal in this respect.

There are several other matters to be explored in the rating data. The
consistently low variance attributable to house differences in the preceding
F-tests leads us to examine the house means for ratings received (or given
out). These means on all six scales are shown in Table IV. The agreement

TABLE IV
House Means on Rating Scales

	Scale I	Scale II	Scale III	Scale IV	Scale V	Scale VI
House A	3.35	3.75	3.60	4.23	3.73	3.79
House B	3.37	3.78	3.55	4.04	3.88	3.76
House C	3.24	3.91	3.51	4.07	3.73	3.65

may conservatively be said to be very marked. In no case is the range
greater than .16, and on some scales it is noticeably less. This suggests a
common orientation or reference point for most people on these scales. In
some cases (e.g., the generous—stingy scale) the means are quite different
from the "average" point on the scale, which was labelled and numbered 4.

Although the grand means for ratings *attributed* are the same as those
for ratings *received*, it is not necessarily true that the two distributions are
the same. One striking difference is in variability. In Table V is shown,
for each scale in each house, the variance of both sets of means. It will
be noted that the variance for mean ratings received is consistently greater
than for mean ratings assigned. The variance ratio (F) for each pair of
distributions is shown in the same table. Of 18 ratios, only the two in paren-
theses failed to attain at least an .05 probability level. There are no con-
sistent house differences in this respect. Apparently, then, people generally
do not vary nearly as much in the way they *distribute* ratings as in the
way they *receive* them. However, differences in ratings attributed do exist,
and it is pertinent to ask whether such differences are associated with
differences in the status or the raters. One might expect, for example, that
those with high status would be somewhat harsher in their ratings than
those with low status, since the former are presumably more secure and can
afford to be more critical; or one might expect, on the contrary, that those
with low status will be harsher in rating others because they are disgruntled

TABLE V

VARIANCE AND VARIANCE RATIO OF THE DISTRIBUTIONS OF MEAN RATING RECEIVED AND
MEAN RATING ASSIGNED FOR EACH SCALE IN EACH HOUSE

	Scale I	Scale II	Scale III	Scale IV	Scale V	Scale VI
House A:						
Received	.46	.97	.99	1.32	.60	.60
Assigned	.14	.13	.19	.12	.20	.09
F	3.28	7.46	5.20	11.00	3.00	6.67
House B:						
Received	.36	.44	.40	.49	.20	.45
Assigned	.14	.15	.09	.06	.13	.12
F	2.57	2.93	4.44	8.16	(1.54)	3.75
House C:						
Received	.32	.35	1.03	.71	.46	.39
Assigned	.20	.09	.09	.04	.17	.15
F	(1.60)	3.88	11.44	17.75	2.71	2.60

and frustrated and tend to see the unpleasant side of others, whereas those with high status may have attained such status by being lenient of other people and seeing their good side.

The question is, therefore, are there any important differences in the three status group with respect to harshness of ratings assigned? Since harshness of rating can have no meaning on Beta scales, both ends being "bad," our attention will be confined to the mean ratings assigned by each subject on the three Alpha scales, where it can clearly be said that assigned ratings which are nearer the "bad" end are harsher than ratings nearer the "good" end of the scales. The previously reported design for the analysis of variance will be used, and the results are reported in Table VI. The F's are not impressive, none attaining an unlikely probability level, and the means exhibit no uniform trend. Hence we may conclude that *one's own sociometric status* is probably not a factor in determining how harshly one will rate others, for the three status groups show no significant difference in this respect.

There is one final inquiry we wish to make into the rating scale data. That is to investigate the association between status and self-rating. It has already been shown that there are significant differences between status groups with respect to ratings received on Alpha scales; now the question is asked, are individuals generally *aware* of this, and do those with low status tend to rate themselves nearer the "bad" ends than do those with high status?

TABLE VI

ANALYSIS OF VARIANCE OF MEAN RATING ASSIGNED ON ALPHA SCALES BY HOUSES
AND STATUS GROUPS

Source of variation			F	P
Scale I				
Houses			.65	—
Status groups			2.82	—
Houses x status groups			.65	—
Error				
		Status group 1:	3.45	
	Means	Status group 2:	3.21	
		Status group 3:	3.49	
Scale III				
Houses			.28	—
Status groups			.28	—
Houses x status groups			1.32	—
Error				
		Status group 1:	3.48	
	Means	Status group 2:	3.56	
		Status group 3:	3.61	
Scale V				
Houses			.89	—
Status groups			2.13	—
Houses x status groups			.76	—
Error				
		Status group 1:	4.00	
	Means	Status group 2:	3.76	
		Status group 3:	3.67	

To answer this question we must modify our original design somewhat.
If we analyzed the variance of the self-ratings and discovered that the status
groups differed significantly in their self-ratings, we could not be sure of a
true association between status and self-ratings because we already know
that ratings received are associated with status, and it would be possible
for self-ratings to be related to ratings received and not to sociometric status
at all. Hence our results will not be valid unless we eliminate the differences
in self-ratings which are associated with differences in mean ratings received;
and then we can analyze the remaining variance of self-ratings to see if
status is involved. On the assumption that the regression of self-rating on
mean rating received is fundamentally linear, the analysis of covariance
will eliminate this third variable. The test will be confined to the Alpha

TABLE VII
ANALYSIS OF COVARIANCE OF SELF-RATINGS AND MEAN RATINGS RECEIVED BY STATUS GROUPS ON ALPHA SCALES

Scale I			
Source	*df*	*F*	*P*
Total	57		
Status groups	2		
Error	55		
Adjusted status group means		.28	—
Scale III			
Source	*df*	*F*	*P*
Total			
Status groups			
Error			
Adjusted status group means		.15	—
Scale V			
Source	*df*	*F*	*P*
Total			
Status groups			
Error			
Adjusted status group means		1.95	—

TABLE VIII
STATUS GROUP MEANS FOR SELF-RATINGS ON ALPHA SCALES: AS OBSERVED FROM RAW DATA, AND AFTER BEING ADJUSTED FOR DIFFERENCES IN RATING RECEIVED

	Scale I		Scale III		Scale V	
	Obs.	*Adj.*	*Obs.*	*Adj.*	*Obs.*	*Adj.*
Status group 1	3.00	3.03	2.10	2.90	2.40	2.99
Status group 2	3.23	3.23	3.14	3.03	3.23	3.22
Status group 3	3.46	3.43	3.15	2.83	2.92	2.49

TABLE IX
CORRELATIONS BETWEEN SELF-RATING AND MEAN RATING RECEIVED ON ALPHA SCALES

	Scale I	Scale III	Scale V
Total	.12	.52**	.51**
Status group 1	.26	.82**	.66*
Status group 2	.07	.60**	.50**
Status group 3	—.29	—.22	.40

* Significant at .05 level.
** Significant at .01 level.

scales since we already know that the relation of status to ratings on Beta scales is not a useful one for our purposes. The results of this analysis are contained in Table VII. In Table VIII are given the self-rating means for each status group on each scale, first as they were originally calculated, and also after they had been adjusted for differences in ratings received. This table shows that on two of the scales substantial adjustments were made, indicating that on these scales the effects of mean ratings received were considerable. We can see just what these effects were by inspection of the total correlations, in Table IX, between *self-rating* and *mean rating received*. On two scales *r* is as high as .5, which is far above the value required for 1% significance. The analysis of variance of the adjusted values shows that after the effects of the received ratings were removed there were no significant differences in self-ratings between the various status groups.[12] The size of the correlation coefficient suggests that if the third variable had not been partialed out a spurious association between status and self-ratings might have been found.

In general, then, we can say that *status alone is not a factor in self-ratings,* and that on two of the three Alpha scales (enthusiastic—apathetic and affectionate—cold) there was a moderate but significant relationship between self-rating and rating received, so that individuals seemed to have some idea of where they stood on these two traits, although on the generous—stingy scale they evidently had no idea at all. Furthermore, the correlations within status groups (in Table IX) show that in the two traits with significant overall correlations, the three status groups can be ranked in the order of the degree of relationship between self-rating and rating received. On both scales the highest status group showed the highest correlations, the middle status groups the next highest, and the lowest status group showed correlations so low that the influence of chance factors on them cannot be ruled out. It appears, therefore, that *the higher the sociometric status of individuals, the more likelihood there is that their self-ratings will be related to the ratings they receive from the group;* and the lower the status of an individual, the less likelihood there is of any relation whatever between her self-rating and the rating she receives from the group. Girls with high status seem to have a better general idea of where they stand on these two scales than do girls with low status. However, although we know that there are differences in degree of relationship between self-rating and rating received

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12 In this analysis the variance due to houses and to interaction were not taken out and degrees of freedom were not subtracted for these variances because the *F*'s were in no danger of being inflated to significance due to improper procedure.

among the three status groups, we do not know how significant these differences are. Although it would be possible to test the various correlation coefficients two at a time for significant differences between them, there is a better way of handling this problem, and the next section will be devoted to it. There are indications that knowledge of how one stands on a trait (i.e., insight) may be associated with one's status.

d. Insight

It has often been said that insight into one's own personality is important for good interpersonal adjustment. The data obtained in this study provide empirical means for inquiring into this question. On each trait scale we have for each girl the mean of the group's rating of her, and her own self-rating. Since it seems reasonable to say that a very good approximation of a girl's true position on a trait scale is given by the consensus of her living associates, insight may be defined operationally as the discrepance between self-rating and mean rating received. The less this discrepance is, the better insight the subject shows. It is possible, therefore, to compute for each girl on each trait the algebraic difference between these two scores. Insight as thus measured is not dichotomized into "present" or "absent" categories, but has been quantified and is now a continuous variable in terms of which each individual can be evaluated on each trait.

If there were a relationship between insight and social adjustment, we would expect to find that the three status groups could be differentiated with respect to their insight scores. Data for all three houses were pooled under each scale, therefore, and analyses of variance similar to those previously described were performed on the insight scores. The variances due to house differences and to interaction between houses and status groups were taken out, as before. The insight scores could be taken with signs only on Alpha scales, but could be taken without signs on all six scales, since a discrepance in any direction between self-rating and mean rating received may be viewed as lack of insight. This permits nine separate analyses of variance (see Table X) of which only one yielded a significant F for the differences between status groups. This was the enthusiastic—apathetic scale, with signs ignored. The six sets of status group means for insight scores, signs ignored, are presented in Table XI, and the means on Alpha scales, signs considered, in Table XII. It is true that the general trend of these means (except for scales II and IV) shows greater discrepancies for status group 3 than for the other two status groups, but the fact that only one F was significant does not allow us to make any positive statement about the relationship

TABLE X

ANALYSIS OF VARIANCE OF INSIGHT SCORES: ALPHA SCALES, SIGNS IGNORED			ANALYSIS OF VARIANCE OF INSIGHT SCORES: ALPHA SCALES, SIGN CONSIDERED		
Source of variation	F	P	Source of variation	F	P
Scale I			*Scale I*		
Houses	2.79	—	Houses	1.53	—
Status groups	.43	—	Status groups	1.96	—
Houses x status groups	.72	—	Houses x status groups	1.63	—
Error			Error		
Scale III			*Scale III*		
Houses	10.24	.01	Houses	2.28	—
Status groups	5.44	.01	Status groups	.42	—
Houses x status groups	.98	—	Houses x status groups	.97	—
Error			Error		
Scale V			*Scale V*		
Houses	1.22	—	Houses	3.60	.05
Status groups	2.21	—	Status groups	2.60	—
Houses x status groups	.38	—	Houses x status groups	.51	—
Error			Error		

ANALYSIS OF VARIANCE OF INSIGHT SCORES:
BETA SCALES, SIGNS IGNORED

Source of variation	F	P
Scale II		
Houses	.33	—
Status groups	.03	—
Houses x status groups	1.02	—
Error		
Scale IV		
Houses	.60	—
Status groups	.99	—
Houses x status groups	1.02	—
Error		
Scale VI		
Houses	1.22	—
Status groups	2.21	—
Houses x status groups	.38	—
Error		

TABLE XI
INSIGHT MEANS FOR STATUS GROUPS ON ALL SCALES, SIGNS IGNORED

	Scale I	Scale II	Scale III	Scale IV	Scale V	Scale VI
Status group 1	.85	.75	.76	.89	.93	.75
Status group 2	.81	.75	.94	.79	.92	.96
Status group 3	1.00	.72	1.54	.59	1.48	1.12

TABLE XII
INSIGHT MEANS FOR STATUS GROUPS ON ALPHA SCALES, SIGNS CONSIDERED

	Scale I	Scale III	Scale V
Status group 1	.30	—.40	—.80
Status group 2	—.03	—.56	—.56
Status group 3	—.52	—.82	—1.27

between insight and status. Apparently, however, scale III did differentiate between status groups with respect to insight, and additional experimentation with this scale may prove fruitful.

These findings answer the question raised from the results of the analysis of covariance, which showed that the degree of association between self-rating and mean rating received was greatest for the highest status group and least for the lowest status group. The question was then raised as to whether these differences were significant or not. The answer as given here is that they are not; the *trend* of the insight means for the status groups corresponds with the *trend* of correlations, but there is insufficient evidence to support a contention that the three status groups are not samples from the same population with respect to insight.

These results do not support the hypothesis that good social adjustment depends to any substantial extent on insight. Such a finding holds, of course, only for the operational definition of insight used here; it may be that a clinical study of individuals would yield a contradictory result. Whether the measurement of insight be clinical or statistical, it is important that theories relating insight to social adjustment be tested empirically, and sociometric data offer excellent criteria for such tests: a person with very low status in his living group as revealed by sociometric methods is a person with inadequate *social* adjustment; and a person with very high status in his living group is a person who is well-adjusted according to one social criterion.

The question may reasonably be asked, are judgments of oneself con-

nected at all with judgments of others? Is there any relationship between *harshness* in rating others and *harshness* in rating oneself? There are two sets of independently obtained data which may be used to investigate this question. In the mean rating assigned by each girl we have, on the Alpha scales, a measure of her harshness in rating others: the higher this rating numerically, the nearer the ratings she assigned were to the "bad" end of these scales. In the insight score for each girl on the same scales we have a measure of her harshness in rating herself: high (plus) scores indicate self-depreciation, which may be interpreted as rating oneself more harshly than others rated one, while low (minus) scores would mean self-inflation, or rating oneself more leniently than others rated one. The question is, then, are high mean ratings assigned associated with plus insight scores? The simplest test of such an association is a product-moment correlation coefficient between harshness and insight, with the signs considered on the insight scores. Such a test only has meaning on Alpha scales, of course, since there is no obvious way of measuring harshness on Beta scales. The correlations obtained in these three scales are given in Table XIII.

TABLE XIII

CORRELATIONS BETWEEN INSIGHT AND MEAN RATING ASSIGNED ON ALPHA SCALES

Scale I	Scale III	Scale V
.33*	.18	.37*

* Significant at .01 level.

The r's for scales I and V attain statistical significance $(P = .01)$, but are not very high. They allow us to conclude that on two traits there seems to be a positive relationship, hardly ascribable to chance, between harshness in rating others and harshness in rating oneself, but that this relationship is not one of high degree. It does appear, however, that individuals whose reference point for rating on these scales is such that they rate others severely tend somewhat to apply the same standards to themselves; in other words, there is a tendency for the same scale reference points to be used for ratings of the self and others.

If each individual can be placed on a continuum with respect to insight, it seems reasonable to believe that the *group as a whole* can be characterized in the same respect. Such a characterization does not imply a "group mind" concept, for it does not suggest that the group behaves as a magnified individual, but only that a group may be said to be more or less insightful according to how its members fall on the insight continuum. Just as we

can describe the intelligence of any group by comparing its average intelligence to some norm, we can do the same thing with group insight, except that since there are no norms we will have to invent suitable ones for our purpose. This may be done arbitrarily, but reasonably, in the following manner. Theoretically, we would expect that if insight is measured on an Alpha scale some members of the group will tend to exhibit self-depreciation and some will show self-inflation. Since the insight scores will have differentiating algebraic signs for these two kinds of lack of insight, it may be expected that if a group as a whole possesses *average* insight, the insight scores of its members would add up to approximately *zero*. This says nothing about the variability of the insight scores: a mean of zero does not require that all the discrepancies be near zero, but only that they will tend to cancel each other out in an average group which tended neither to self-inflation or self-depreciation. Once this mean has been obtained it may be tested for significance on the null hypothesis that it should be zero. This test is used, instead of a test of the significance of the difference between the means of the self-ratings and the mean ratings received, because the insight scores represent a difference distribution from paired measurements on each individual.

The insight means for three houses on the Alpha scales are presented in Table XIV, together with the values of t obtained in each test of sig-

TABLE XIV

INSIGHT MEANS FOR EACH HOUSE ON ALPHA SCALES, SIGNS CONSIDERED

	Scale I	Scale III	Scale V
House A	—.39	—.98	—1.21
t	1.35	2.94**	6.99**
House B	.09	—.55	—.53
t	.39	2.59*	2.18*
House C	.10	—.22	—.48
t	.55	1.19	1.96

* Significant at .05 level.
** Significant at .01 level.

nificance. It will be seen that House A showed two means which were different from zero at the .01 probability level, House B showed two significant at the .05 level, and House C showed no significant differences at all. These results suggest that the phenomenon of group insight may be a continuous variable in terms of which groups may be evaluated; and furthermore, that a generous—stingy scale may be less useful for this purpose than

enthusiastic—apathetic or affectionate—cold scales. Apparently House C exhibits fairly definitely, and House B less definitely, a consistent bias on these two scales, such that the members of these groups tend to rate themselves significantly nearer the "good" end than they are rated by the other members. Now, whether this means that these girls have rated others accurately but have rated themselves leniently, or whether it means that they have rated themselves accurately and others harshly, the net result is the same: that there is in the case of one or two houses a definite discrepance, probably not attributable to chance, between what the members think of themselves and what their housemates think of them. This may be indicative of some kind of malfunctioning in the group, since one would not expect a cohesive and properly integrated group to exhibit such discrepances. One would expect that in a well-integrated group the members would have, on the whole, some idea of what others think of them, and where such correspondence is notably lacking, one might suspect some kind of disharmony in the group. In a later section an attempt will be made to relate this finding to other characteristics of the three houses.

It would be interesting also to look further into the question of whether these discrepancies reflect harshness in rating others or leniency in rating oneself, or both. For this purpose it would be possible to design a study which would employ an Alpha scale that could be externally validated (such as intelligence, or even good looks by using an outside panel of judges). In such an experiment we would have, in addition to the self-rating and the mean rating received for each subject, a third estimate of her standing on the trait from an outside source. By an analysis of these three ratings it could be determined (provided a significant discrepance between the first two existed, which might not happen with more objective traits) whether the self-ratings were more lenient or the mean ratings received more harsh than the "true" ratings, or whether both tendencies were present.

There is a final interesting possibility which grows out of these results. It may be that the mechanism involved in self-inflation operates as a kind of figure-ground pattern for the subject, such that when she is asked, while assigning ratings to other persons, to rate *herself*, she sees herself in contrast to others and seems to stand out from them somehow; this might account for the discrepance between self-ratings and ratings received. This hypothesis could be tested, with a certain scale and a certain group that had previously exhibited such discrepancies, by asking subjects on one occasion only to rate themselves, and then at a later occasion, asking them only to rate

others; or perhaps reversing the procedure, but allowing a substantial time interval in between. Then the same tests applied would give grounds for confirming or rejecting the hypothesis of figure-ground mechanism, for if this were incorrect the results would show the same discrepancies as the previous tests.

e. Projection

Experimental studies of projection have been few and their results unclear and contradictory. The first investigator in this field was Sears (26), and his work has been the starting point for subsequent research.[13] The term "projection" as used here will refer to the empirical phenomenon whereby an individual tends to attribute to others a trait which, according to the consensus of her living group, she herself possesses. When necessary to differentiate between the projection of reprehensible and non-reprehensible traits, such a distinction will specifically be made; otherwise projection will be taken as the general case of the tendency to rate others like others rated oneself.

As a rough measure of whether projection is operating in a subject, we can say that if the mean rating she received from the group and the mean ratings she assigned to the group are both on the same side of (above or below) the grand group mean for that trait, the subject is exhibiting a tendency to project, or rate by similarity. If these two measures (her mean rating assigned and mean rating received) are on opposite sides of the group mean, there is no projection by that subject.[14]

The first matter to be investigated is the relation of projection to insight. Sears found that "non-insightful" persons tended to show more projection than "insightful" ones. The data obtained here provide a means of

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[13] The very definition of projection has been a source of disagreement. Sears quoted Healy, Bronner, and Bowers in defining projection as "a defensive process under sway of the pleasure principle whereby the Ego thrusts forth on the external world unconscious wishes and ideas which, if allowed to penetrate into consciousness, would be painful to the Ego." This is essentially the classical psychoanalytic definition. Sears' results appeared to indicate that not only reprehensible traits were projected, since he found projection occurring at both ends of scales running (apparently) from "good" to "bad." Rokeach (24) pointed out that if such is the case that phenomenon cannot properly be termed projection if one still accepts the classical definition, and suggested "rating by similarity" for the general case. In this study no effort will be made to clarify the definition, since that is more the realm of theory than research.

[14] If either the mean rating received or the mean rating given was equal to the group mean, the subject was, of course, not projecting.

testing this result. In order to avoid the projection-similarity controversy, we can restrict ourselves to the Beta scales, since on them both ends are "bad" and therefore an individual who projects by our definition on one of these scales is doing what would be expected from the classical theory of projection of reprehensible traits. The measures of projection and of insight have been obtained somewhat independently,[15] and we can therefore test the hypothesis suggested by Sears' results: that those who project will show poorer insight than those who do not project. For each of the three Beta scales there will be mean insight scores (signs ignored) for the Projecting group and the Non-Projecting group, and the differences between them may be tested for significance. Table XV summarizes these data giving the

TABLE XV
INSIGHT MEANS FOR PROJECTING AND NON-PROJECTING GROUPS ON BETA SCALES

	Scale II	Scale IV	Scale VI
Projecting	.60	.63	.84
Non-Projecting	.86	.86	1.09
	$t = 1.74$	$t = 1.68$	$t = 1.26$

pairs of means and the results of the t-test for each Beta scale. The results not only do not confirm the hypothesis, but actually tend in the opposite direction, for the insight means for the projecting group are consistently below the insight means for the non-projecting group. None of the differences is significant, however, so nothing definite can be said about this trend; but the direction of the differences suggest that Sears' original hypothesis that projection and lack of insight are associated may not be readily verified.

What is the relation of the projection mechanism to an individual's social adjustment? Are those with low group status more likely to project because their social insecurity renders them less able to cope with their own possession of reprehensible traits? Or are they inclined to be less discriminating and to see others through self-colored spectacles as it were, and rate by similarity? To obtain some evidence on these questions the relation of projection to group status was examined. Those in each of the three status groups were divided into projecting and non-projecting subgroups. Chi-square tests were performed for each scale separately for the Alpha and Beta scales each lumped together, and for all scales pooled. None of the

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[15] Even though both measures involved one common factor, mean rating received, this will not bias the results since the operations deriving them were different.

results was significant, indicating that a null hypothesis of no association between projection and status cannot be rejected.

The results of this inquiry into projection seem to suggest that the correlation approach to this mechanism may not prove successful. Nothing very helpful has been added here to the already confusing body of literature on this subject. At the present stage of research, it is probable that the usefulness of statistical studies of projection is limited to pointing the way for intensive clinical analysis.

f. Status and Noticeability

It will be remembered that the two heavy lines in Figure 1 are the fiducial limits for indifference, or noticeability. The nearer a subject is to the apex of the triangle, the more unnoticed she was. Now, if a perpendicular line is drawn from the apex of the pyramid to the Indifference base line (this has not been drawn, but can easily be imagined), it will divide all the subjects into two groups (except for one girl who happens to fall right on the line, at $C = R = 9$). The subjects who fall on the left of this imaginary line, between it and the Choice base line, are girls who received more rejections than choices, and hence can be called the disliked half; the subjects who fall on the right of the line, between it and the Rejection base line, received more choices than rejections, and can be called the liked half. Now inspection of the graph reveals that of the 12 girls who fell below the fiducial limit of indifference (represented by the 12 points nearest the vertex), 9 of them were in the liked half and 3 in the disliked half; and of the 12 girls who fell above the fiducial indifference limit, these proportions are exactly reversed, and 9 are in the disliked half and 3 in the liked half. This suggests a *trend toward the disliked half as noticeability increases*. Table XVI presents these data. It is seen that when noticeability is low, the choices are above the rejections (except for the 6-10 interval); and as noticeability increases the rejections increase and finally surpass the choices, remaining increasingly above it as noticeability increases. Apparently the more unnoticed a girl is, the more likely she is to be more liked than disliked; while very noticed girls are more likely to be disliked than liked. To test the significance of this shift, we may divide the subjects into three indifference groups as before: those toward whom a highly significant amount of indifference was shown who were very unnoticed (between the apex and the fiducial line nearest it), those receiving a moderate amount of indifference, and those toward whom significantly little indifference was shown, who were highly noticed (above the other fiducial limit for indifference).

TABLE XVI

THE NUMBER OF SUBJECTS CHOSEN AND REJECTED AS A FUNCTION OF LEVEL OF NOTICEABILITY

Number of times mentioned	Choices	Rejections
0-5	1	0
6-10	1	3
11-15	17	7
16-20	31	18
21-25	26	15
26-30	28	27
31-35	9	17
36-40	14	23
41-45	12	31

TABLE XVII

DIVISION OF THE INDIFFERENCE GROUPS INTO "DISLIKED" AND "LIKED" SECTIONS

	Indifference groups			
	1	2	3	
Disliked	3	11	9	23
Liked	9	22	3	34
	12	33	12	57

Chi-square = 7.93
P = .02

Each of these three groups may be further subdivided into the number falling in the liked half and the number falling in the disliked half of the distribution (the individual on the dividing line is left out of this grouping). For this 2×3 table (Table XVII) chi-square is 7.93 (p=.02). It seems clear, then, that the less mentioned in a sociometric questionnaire a girl is, the more likely she is to be fairly popular, and as she becomes more mentioned she is more likely to be unpopular. It may be that among college girls the disagreeable incidents make a more lasting impression than the agreeable ones, and that objectionable eccentricities make for greater notice. Or perhaps the "nicer" girls are careful not to become too conspicuous. But it would seem that extreme popularity would also involve high notice, i.e., that girls with high status would possess strong, colorful personalities. The findings of Jennings (13) and others suggest this. We can test it by utilizing the division into status groups as well as the fiducial indifference limits. Of the 13 members of status group 3, the lowest status group, 8 of

TABLE XVIII

NUMBER AND PER CENT IN EXTREME STATUS GROUPS FALLING ABOVE FIDUCIAL
INDIFFERENCE LIMIT

		Status group 1	Status group 3
Total number in status group		10	13
Number above indifference limit		1	8
% above indifference limit		10%	62%
	t	2.51	
	P	.02	

them fell above the high noticeability limit; of the 10 members of status group 1, only 1 also fell above the fiducial noticeability limit. For the difference between these proportions, $t=2.51$, representing a probability level of .02. (See Table XVIII.) Such a result gives strong evidence for the hypothesis that people with low status are mentioned more often than people with high status. This correlation raises a question about previous clinical observations that leaders (measured sociometrically) tend to have strong and colorful personalities in comparison to isolates. Perhaps the ability not to become too highly noticed is itself a very important aspect of leadership. Or, perhaps, these results illustrate the incorrectness of assuming that "leader-follower" characterizations are legitimate interpretations of high and low status.

g. Group Cohesion

It will be recalled that House A showed on two traits a highly significant lack of insight, that House B showed on two traits a significant, but less so, lack of insight, and that House C showed no lack of insight which attained formal significance. While this suggests a rank order, it must be remembered that the size of the probability value of t is not necessarily indicative of degree, but only of the likelihood that chance played a part in the result. However, there are legitimate grounds for a rank order according to group insight shown. The analysis of variance of insight scores, with and without signs (Table X) showed in two cases, at least, that house differences in insight could probably not be attributed to chance. Inspection of the house means for insight on the Alpha scales (Table XIV) shows that there was a fairly consistent tendency (though not always significant) for the same pattern between houses to recur. It is safe to say, therefore, that the three houses may be ranked in that order with respect to group insight: House C showed the best insight, House B the next best, and House A the poorest insight.

Attention may now be turned to the relative cohesion or integration of the three groups as obtained from the sociometric data. Measurement of this quality of a group has been attempted in various ways, based chiefly on the frequency of mutual choices (or its complement, frequency of unreciprocated choices) in the group, on the assumption that the greater the number of mutual choices the better the group cohesion. This appears to be a questionable assumption, for several reasons. The most obvious objection is that a group might be composed entirely of small cliques and subgroups, pairs, and so forth, which were very tightly knit, and such a group would show a large frequency of reciprocated choices, but it could not reasonably be said to have a high degree of *group* integration or cohesion. Its *units* or subgroups may have great cohesion, but that is not ordinarily what is meant by the cohesion of the group as a whole.

Consequently any method purporting to measure group integration which is based on the frequency of mutual choices within the group is probably an unsound one. Since measurement of cohesion is to be derived from the sociometric picture of the group, we may ask the question, what kind of group structure can be said to be indicative of high group integration, and what kind of structure can be said to show low group integration? It may be hypothesized that the answer to this question lies in the general distribution of choices and rejections within the group. We might expect that in a well-integrated group, choices and rejections would be distributed fairly uniformly, and not many individuals would receive very great numbers of either choices or rejections; while in a group with poorer cohesion, more individuals would be singled out for large numbers of choices and rejections. If the social rewards in a group are very unevenly distributed, if there are pronounced extremes of status, the consciousness of this in the group's members might tend to produce disharmony, and to reduce the integration of the group. We might expect to find, then, that the relative shape of the status curve should give some indication of the group cohesion. If the curve is highly peaked, with few persons at either extreme of status, this would mean that the distribution of choices and rejections in that group is fairly even, and that there are no heavily accented differentiations in status, and and hence that the group cohesion is good; if, on the other hand, the status curve of a group should show heavily weighted tails, with many people at the extremes of status, this would suggest an uneven distribution of rewards and a consequent lack of group cohesion. The problem, therefore, is to devise a measure of social status which will approximate a normal curve, and which can be used to inquire into the relative group integration of the three houses in this study.

Although all the subjects have already been divided into three status groups, this is not a sufficient number of groupings for us to draw many conclusions on this point. On the other hand, for the analyses previously reported it was necessary not to subdivide the groupings any further lest there be too few subjects in each group to permit meaningful statistical analysis. This is not now a factor, however, and so we may proceed in an attempt to derive additional status groupings. For this purpose let us re-examine the triangular plot in Figure 1. From this graph we may see that a few girls fell above the fiducial choice limit and also below the fiducial rejection limit; they are represented by points in the lower righthand corner of the triangle, bounded by the broken line farthest from the choice base line and the thin line nearest the rejection base line. It is clear that these girls have the very highest group status, since they received very many choices and very few rejections. Correspondingly, the very lowest status group will be composed of girls who received very many rejections and very few choices, i.e., who fell above the fiducial rejection limit and below the fiducial choice limit. This gives us our two extreme status groups. Now for the groups next in order of status, we can say that the second highest status group should be composed of individuals who ranked above the mean in choices but not above the rejection mean (provided, of course, that such individuals do not fall in the very highest status group first formed); and the second lowest status group will be those who received more than the mean number of rejections, but not more than the mean number of choices (and who did not belong to the very lowest status group). The remainder of the subjects can be said to have moderate status. This gives us five status groupings, the gradations between which are meaningful, and in which the deviations on each end are approximately equivalent. In Figure 3 are shown the areas from which these status groups were taken on the original plot. The numbers 1 to 5 are from high to low status. If this drawing is compared with Figure 1, the original triangular graph, the geometrical basis for the status groupings may be seen quite clearly.

A frequency distribution now may be made, showing how many out of the total number of subjects fell into each of the five status groups. This distribution is given in Table XIX. It is approximately normal in shape, though slightly skewed to the right. Here, in discrete form, is a suggested method of ascertaining and representing social status, in terms of which characteristic curves for any social group may be compared. In order to do this, the total distribution will be broken down into house distributions using the same five status groups. The three house distributions are shown in
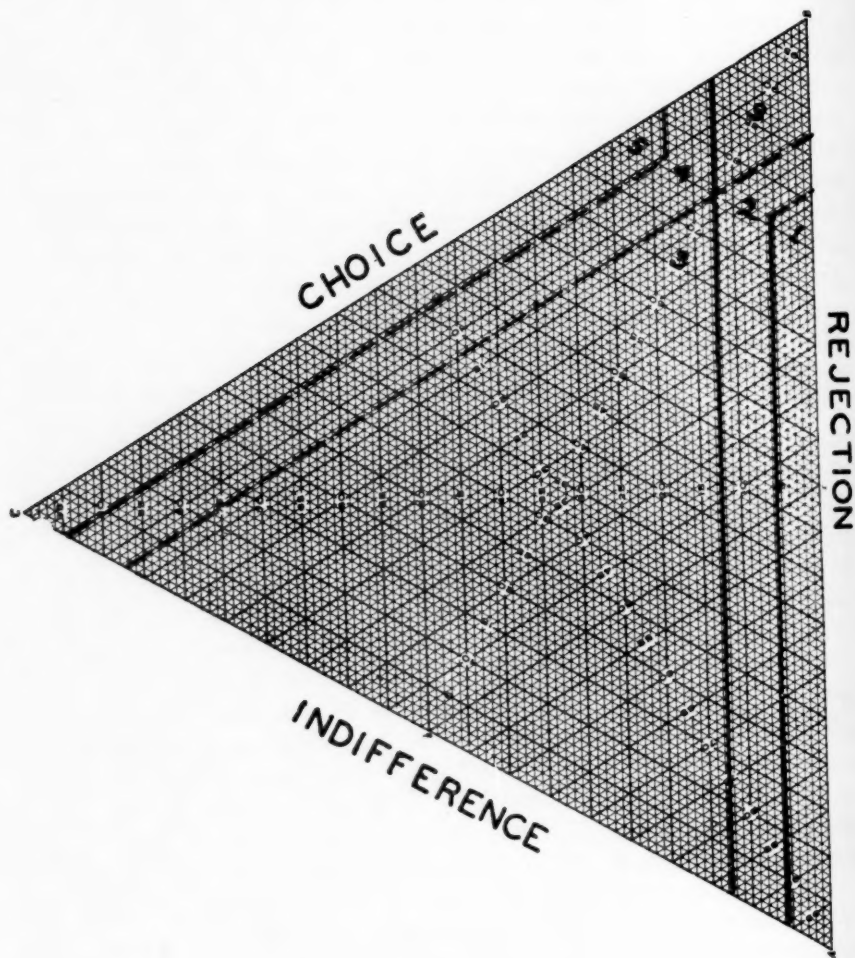
FIGURE 3
AREAS REPRESENTING THE FIVE STATUS GROUPS

TABLE XIX
TOTAL NUMBER OF SUBJECTS FOR ALL HOUSES IN EACH OF THE FIVE STATUS GROUPS

Status group	Total number
1	7
2	14
3	20
4	11
5	6
Total	58

TABLE XX
NUMBER OF SUBJECTS IN EACH STATUS GROUP, HOUSE BY HOUSE

	Number of subjects in status group		
Status group	House A	House B	House C
1	4	2	1
2	3	5	6
3	8	4	8
4	2	5	4
5	4	1	1
Totals	21	17	20

Table XX. We may note first that in each house the groups on either side of the middle group are approximately equal, but that there are consistently more individuals in groups 1 and 2 (with high status) than in groups 4 and 5 (with low status).

These three status distributions may now be used to test the hypothesis with respect to group cohesion. Inspection of the distributions reveals at once that there is a noticeable difference between the shape of the curve for House A and the curve for House C. House C is relatively bunched together, most people being concentrated near the middle, whereas House A shows heavily weighted tails. Since it has been proposed that the more individuals there are who lie at the extremes of social status, the poorer the cohesion of the social group, we may use as an index of group cohesion the ratio of the number of people in the "tails" of the distribution (i.e., the extremely high and extremely low status groups) to the total number of people in the house. Table XXI shows, for each house, the number falling in the tails of the curve, the total number in the house, and the ratio expressed as

TABLE XXI

NUMBER AND PER CENT OF INDIVIDUALS IN EACH HOUSE FALLING IN THE TAILS OF THE STATUS DISTRIBUTION, AND THE REMAINDER

	No. in tails	Remainder	Totals	% in tails
House A	8	13	21	38%
House B	3	14	17	18%
House C	2	18	20	10%
	13	45	58	

Chi-square = 5.01

.10 P .05

a percentage. House C's index of group integration was 10%, which means that comparatively few of its members fell in the extreme status groups; House B's index was 18%, and House A's 38%, and thus the three houses may be ranked in that order according to the group cohesion they revealed, with House C showing the best cohesion and House A the poorest. It will be seen that this ranking corresponds to the ranking of the three houses with respect to group insight, House C having been found to show the best insight and House A the worst. The insight scores were shown in some cases to be highly significant, House A in particular showing a remarkable departure from expectation.[16]

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[16] It would be desirable to apply the same criterion to the cohesion ranking, but this is not possible because we have no basis for setting up expected tail-proportions. We might say, e.g., that since there are five status groups the expected frequency in each is 1/5 the total frequency, or 2/5 in the two tails. Or we might argue that since the distribution seems to be normal we should take as our expected value for each group the binomial coefficient for an expansion with five terms, i.e., 1, 4, 6, 4, 1, which would give us a proportion of 1/8 in the two tails. There is, however, no basis for either of these assumptions, or apparently for any other one. It is possible to apply a chi-square test for differences between the three houses in the proportion of members in the tails. The 3×2 table yields a chi-square value of 5.01 for which the probability is between .1 and .05. This does not give us very strong grounds for rejecting chance as a determiner of the proportions, but on the other hand it does not prevent us from making a rank order with the understanding that the differences between ranks are not all clearly significant. The fact that the difference between House A and House C is significant at a fairly high level may be shown from a t-test for the two proportions, 10% and 38%, in the tails of the curve in each house. The result of this test is a t of 2.09, which is beyond the .05 probability level. Since we only wish to make a *ranking* of the three houses with respect to tail proportions, we have sufficient evidence for saying that House C exhibits the best group cohesion of the three houses, and House A the worst, with House B falling somewhere in between.

It may be interesting to obtain a measure of group cohesion by means of moments. We will use the variance rather than the kurtosis for this purpose and we can compute the variance of the frequency status distribution for each house. Because the distributions are not continuous, we will use Sheppard's corrections for grouping. This operation is based on the *assumption that the smaller the variance of the status distribution in a house, the greater the cohesion, and the larger the variance the less cohesion present in that group.* Thus the variance may be said to represent another rough index of the distribution of rewards in the group: the more uneven such distribution, the greater the variance of status will be. Accordingly, the variance for House A is 1.68; for House B, 1.20; and for House C, .81. It is seen that this method may also be used to obtain the same ranking of the three houses as given by other measures of group cohesion. If we compute the variance ratio between Houses A and C, it turns out to be 2.07; the value required for .05 significance is 2.12.

To recapitulate, we have attacked the problem of what is essentially the group's state of sociometric health from two independent starting points and two independent sets of data: one, the structure of the group as revealed by the sociometric data, and the other, the information obtained from analysis of the rating scale data. These two paths led us to the same result, the same rank order of the three houses. There is, therefore, a suggestion that these two aspects of the group—its sociometric structure and its rating scale performance—are related, perhaps through a common association with a third variable which we may broadly designate as the general condition of the group, and which has to do with its function as a unit and as a vehicle for the satisfactions of its members. Relationships have already been found between the same two aspects with respect to individual within the group, i.e., associations between sociometric status and ratings received. The finding that the two are also related at the group level suggests an order of interdependence which will bear careful study.[17]

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[17] Insofar as group cohesion and insight, as measured here, are equivalent to "group solidarity," it is interesting to note that these empirical findings of less solidarity associated with heavier status extremes are in accord with the theoretical structure of groups worked out by Bales (1) and his associates. For example, ". . . solidarity is stronger between persons of the same generalized social status than between members of different strata," and "As status differences between persons increase, strains are created" (pp. 8, 12).

h. Patterning of Choices and Rejections

The material presented in this section represents an attempt to gain an understanding of fundamental processes involved in group sociometric phenomena.

Let us begin by remembering that although the number of choices and rejections which each subject distributed was fixed, the way in which she distributed them was not. That is, each subject was allotted 3 choices under 4 criteria, making 12 choices in all. If she chose the same individuals under each criterion, she would have given all her choices to three girls, by choosing each of them under every criterion. Hence, each of the girls she chose would have received four choices from this subject. On the other hand, this individual *could* have distributed her 12 choices to as many as 12 different people, by not repeating any choice under another criterion. Had she done this, each of the girls she chose would have received one choice from her. It is clear, then, that a subject could choose as few as three others and as many as twelve others. Similarly, she could reject from three to twelve individuals, inclusive. There is, therefore, additional information for analyses in the *number of persons a subject chose or rejected,* and the *number of persons choosing or rejecting her.* For reasons previously discussed, these measures were not used in the determination of status levels, but we may now turn to them for other information. We wish to explore the relation of group status to the patterning of choices and rejections. Table XXII shows, for each status group, the average number of persons

TABLE XXII

AVERAGE NUMBER OF PERSONS CHOOSING AND REJECTING MEMBERS OF EACH STATUS GROUP, AND AVERAGE NUMBER OF PERSONS CHOSEN AND REJECTED BY MEMBERS OF EACH STATUS GROUP

	Status group 1	Status group 2	Status group 3
Number in status group	10	35	13
Total number of persons choosing	86	154	26
Average for each status group	8.60	4.40	2.00
Total number of persons rejecting	20	148	146
Average for each status group	2.00	4.23	11.23
Total number of persons chosen	48	156	62
Average for each status group	4.80	4.46	4.77
Total number of persons rejected	55	191	.68
Average for each status group	5.50	5.46	5.23

chosen and rejected by each of its members, and the average number of persons choosing or rejecting each of its members.

As we expect, the three status groups appear to differ widely in the average number of persons who chose and rejected them; this was an indirect basis for the status groupings. However, we also notice that the three groups did not vary much in the average number of persons they chose or rejected. What is even more surprising, we see that the *means for choices made are consistently below the means for rejections made,* by all status groups, indicating that people of all status groups tended to choose a smaller number of people than they rejected. In order to understand this more fully, and to perform tests of significance, it is necessary to pause in our discussion and consider a new way of looking at these phenomena.

The average number of persons chosen is essentially a matter of relative *intensity of focusing of choices.* That is, when an individual chooses her minimum of three others, giving all her 12 choices to them, she has concentrated her choices as much as she could; when she chooses her maximum of twelve others, she had gone to the other extreme and diffused or spread her choices as much as possible. In the first case, she has distributed four choices to each person, and in the second case she has given one choice to each person. In other words, when one individual chooses another, she can give her as few as one choice or as many as four choices. She cannot give her less than one choice, because then she would not be choosing the second individual at all; and she cannot give her more than four choices, because there were only four criteria and no person could be named twice under a single criterion.

This is more easily understood by reference to the matrices in Table I. Each box in the matrix represents a reaction on the part of one individual toward another individual. When a box is empty, that means that this particular reaction was indifference, i.e., neither choice nor rejection under any criterion. From now on the term "reaction" will be used to mean either choice or rejection but not indifference. When a box is not empty, it is filled to some extent with either choices or rejections.[18] A filled box may contain 1, 2, 3, or 4 choices or rejections. The *intensity* of the reaction is represented by the relative fullness of the box: the more entries in it, the more intense the reaction. The term "filled box" will also be used to denote a reaction of one person to another person when that reaction was not com-

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[18] A very small number of boxes—about 1% of all those not empty—contained both choices and rejections.

plete indifference. The number of filled boxes in each person's row is the number of individuals chosen or rejected by that person; the number of filled boxes in each person's column is the number of individuals who choose or reject that person.

If an individual concentrates her choices as much as she can, as we have seen, she will give all her choices to three other people. Since she distributed 12 choices in all, this means that her horizontally filled boxes will contain an average of 4 choices. If this individual spreads her choices so as to give them to 12 others, her horizontally filled boxes will then contain an average of 1 choice. It may be seen, then, that *intensity of reactions is equivalent to the mean entry per filled box.* As this figure approaches 4, its maximum, this indicates great concentration; as the figure approaches 1, its minimum, this indicates great spread or diffusion.

Since there are only four class intervals for filled boxes, we may easily arrange a frequency distribution for each house, showing how the choices and rejections were distributed in that house. This has been done in Table XXIII. To illustrate the reading of this table, House A showed a total of

TABLE XXIII

FREQUENCY DISTRIBUTION OF CHOICES AND REJECTIONS PER FILLED BOX FOR EACH HOUSE

		House A		House B		House C		Totals	
		C	R	C	R	C	R	C	R
Frequency	1	22	49	22	30	32	39	76	118
	2	16	27	14	12	19	31	49	70
	3	14	23	14	18	14	25	42	66
	4	39	20	28	24	32	16	99	60
	Totals	91	119	78	84	97	111	266	314

91 boxes filled with choices, of which 22 contained one choice, 16 two choices, 14 three choices, and 39 the maximum of four choices. Translated into social terms, this means that in House A there were 91 reactions of choice[19] of one person by another, and that these may be classified by intensity: 22 of them were very mild choices, and so on; 39 of them were very intense choices. Had all the choice reactions in this house been extremely mild (i.e., if all filled boxes contained only one entry), there would have been a total of 12×21, or 252 filled boxes; had all the choice reactions been very intense (with four entries per filled box) there would have

[19] Note that this does not mean number of choices, which in House A was 12×21, or 252.

been only 3×21, or 63 filled boxes. The same breakdown is given for the rejections in House A, and for the choices and rejections in the other two houses.

It may be noticed at once that in each house there are more boxes filled with rejections than with choices, although we know that in each house the total number of choices equaled the total number of rejections (i.e., both were 12N). This suggests that since more boxes are filled with rejections, *rejections are less concentrated than choices*. If we examine for each house the number of filled boxes at each level of intensity of choice and rejection, we see that in general the rejection distributions are greater than the choice distributions at 1, 2, and 3 entries per box, but less than the distributions at 4 entries per box. This may be seen clearly in Table XXIII. The pattern is uniform across the three houses.

Now, exactly what does this tell us? It tells us that in general rejections are more likely to be given out (and received) 1, 2, or 3 at a time, while choices are more likely to occur 4 at a time; hence, that choices appear to be more highly concentrated, or focused, than rejections. We now wish to test the significance of this observed discrepance. The null hypothesis will state that there is no difference between the intensity of choices and of rejections that is not attributable to chance factors. Although we have a frequency distribution of this concentration, we have not yet any specific measure of intensity. Such a measure will be the mean number of choices (or rejections) per filled box, which is equivalent to intensity of reaction, if reaction excludes indifference. This is obtained by dividing the total number of choices in any house (12N) by the total number of choice reactions, or boxes filled with choices, in that house. For example, in House A we would divide 252 by 91, and this would give us 2.77 choices per filled box; and dividing 252 by 119 would give us 2.12 rejections per filled box. This mean has as its theoretical limits 1 and 4. It will be used as the measure of intensity of choices and rejections; the nearer it is to 4, the more concentrated the choices or rejections, and the nearer it is to 1, the more diffuse they are. Now we are ready to perform the analysis of variance to test the difference in intensity of the two reactions, choice and rejection. There are a total of 580 filled boxes in all the houses, which gives us 579 degrees of freedom. The results are given in Table XXIV, together with two means, which are 2.22 for rejections and 2.62 for choices. Although these do not appear to be far apart, the fact that the total N was so large made this difference significant at the .001 level. The difference between the three houses was not significant, nor was the interaction between houses and reactions.

TABLE XXIV
ANALYSIS OF VARIANCE OF INTENSITY OF REACTION

Source of variation	F	P
Houses	1.43	—
Choices-Rejections	6.23	.001
Houses x choices-rejections	1.87	—
Error		
	Choices	Rejections
Total number	696	696
Boxes filled with	266	314
Mean entries per box (mean intensity)	2.62	2.22

This is almost unshakable evidence that there is a fundamental difference between the operation of choice and the operation of rejection. People tend to focus their choices upon relatively few people, but diffuse their rejections over many people. Part of the explanation for this phenomenon may be that interpersonal relations have a positive, not a negative basis. That is, friendships are much more clearcut than animosities. Everyone has his set of friends, but one does not speak of a set of enemies. Consequently, when called upon to name those she prefers, an individual knows fairly well who these people are, and proceeds to name them fairly consistently over the various criteria. Asked to name those she dislikes, she does not have in her mind a fixed pattern of individuals corresponding to her friends; she probably has to think a bit in order to supply the number of rejections called for by the sociometric test. The result is a less consistent naming of individuals, because dislikes are generally not as crystallized as likes. Hence there is greater diffusion of rejections among the group, whereas choices are more highly focused. This is of course a speculative interpretation, since there is nothing in the data to give us any clues at all on this point. Future research might be designed to yield some information about this, perhaps by testing the amount of time required by subjects to name choices and to name rejections, or by asking for indications of intensity. This finding is interesting, and empirical attempts to see what lies behind it should be rewarding.

Having established this basic difference between the intensity of choices and rejections, let us now return to a consideration of the choice and rejection processes as they relate to status differences. The null hypothesis will state that intensity of choices does not vary significantly with status, nor does intensity of rejections. First we shall investigate the concentration of choices

TABLE XXV

ANALYSIS OF VARIANCE OF INTENSITY OF CHOICES AND REJECTIONS GIVEN OUT

Source of variation	Degrees of freedom	Sum of squares	Mean square	F	P
Choices					
Houses	2	4.07	2.04	1.34	—
Status groups	2	2.17	1.09	.71	—
Houses x status groups	4	15.77	3.94	2.59	.05
Error	257	390.88	1.52		
Total	265	412.89			
	Status group 1:	2.50			
Means	Status group 2:	2.69			
	Status group 3:	2.52			
Rejections					
Houses	2	5.27	2.63	2.01	—
Status groups	2	.53	.26	.20	—
Houses x status groups	4	3.12	.78	.60	—
Error	305	400.35	1.31		
Total	313	409.27			
	Status group 1:	2.29			
Means	Status group 2:	2.20			
	Status group 3:	2.18			

and rejections *distributed* by the three status groups. The results of the analysis of variance are given in Table XXV, with the means for each status group. There are no significant differences in the intensity of either choices or rejections given out by the different status groups; all of them appear to concentrate their choices and rejections similarly (i.e., to choose and reject the same average number of persons).[20] Neither are there any differences between the three houses in this respect; these agreements and the status group agreements suggest that people tend to focus their choices and rejections very similarly. However, the interaction between status groups and houses shows a significant *F* for choices given out. A breakdown of the means involved, in Table XXVI shows that House B was largely responsible for this; but we have no independent evidence to indicate how.

Now we shall analyze the variance of the concentration of choices and rejections *received* by each status group. The results, with the status group

[20] This finding is in accord with that of Jennings (13), who observed no difference in "emotional expansiveness" between individuals of high and low group status.

TABLE XXVI
MEAN INTENSITY OF CHOICES GIVEN OUT FOR STATUS GROUPS IN HOUSES

	House A	House B	House C
Status group 1	2.29	3.00	2.18
Status group 2	3.07	2.70	2.46
Status group 3	2.67	2.18	2.77

TABLE XXVII
ANALYSIS OF VARIANCE OF INTENSITY OF CHOICES AND REJECTIONS RECEIVED

Source of variation	Degree of freedom	Sum of squares	Mean square	F	P
Choices					
Houses	2	4.07	2.03	1.31	—
Status groups	2	3.92	1.96	1.26	—
Houses x status groups	4	5.73	1.43	.92	—
Error	257	399.17	1.55		
Total	265	412.89			
Means	Status group 1:	2.64			
	Status group 2:	2.55			
	Status group 3:	2.96			
Rejections					
Houses	2	5.27	2.63	2.23	—
Status groups	2	39.68	19.84	16.81	.001
Houses x status groups	4	4.45	1.11	.94	—
Error	305	359.87	1.18		
Total	313	409.27			
Means	Status group 1:	1.75			
	Status group 2:	1.91			
	Status group 3:	2.60			

means, are given in Table XXVII. Here we have a surprising finding. It might have been expected that *rejections* would be more highly focused upon the *lowest* status group and *choices* more highly focussed upon the *highest* status group. This is actually only half true, or really not quite half true. Although there is a highly significant difference between status groups in the intensity of rejections received, there is no such difference with respect to the intensity of choices received; and in fact, the choice means show a tendency in the other direction, such that there is a slightly greater focusing of choices upon the lowest status group than upon the highest group. In

other words, the rejections conform to what might have been expected, *but the choices do not.*

This means that status level is fairly conclusively a factor in the focusing or concentration of rejections received (this is independent of the actual *number* or rejections received), such that greater intensity of rejections is received by the lowest status group, and rejections are received more diffusely by the highest group; that is, people generally are quite consistent in their rejection of the lowest status group, and spread their rejection widely over the highest group. However, status is *not* a factor in the concentration of *choices* received; there is no tendency for the highest status group to be more consistently chosen than the lowest status group; what little tendency there is indicates the opposite. It seems possible that the few choices which are received by people of low status come from a few consistently loyal friends, and that the average number of choices received by this group from those choosing them is higher than we might have expected. Further implications of these findings must wait until a later section when additional evidence will have been presented.

Attention may now be turned to other aspects of choices and rejections as they are related to status differences. Let us consider first what governs the total amount of choices (or rejections) made or received by any status group. Since each individual was arbitrarily required to make the same number of choices, the total number of choices distributed by any status group is a function only of the size of that group. Each person was asked to make three choices (and three rejections) under each of four criteria of choice; hence if we multiply the number in each status group by 12 we will have the total number of choices (or rejections) made or given out by that group.

The arbitrary number of choices alloted each person did not, of course, govern in any way the number of choices he would receive. The three status groups were formed on the basis of choices and rejections received, and hence the total number of choices received by any group is a function of its status as well as its size. Since the number of choices made and the number of choices received are functions of different variables, we would not expect them to agree; and indeed it may be seen from Table XXVIII that although Group 1 made 17% of all the choices, it received 33% of all the choices, while Group 3, making 23%, received but 11%. These percentage differences are due to the differences in status; if the groups had been chosen at random we would expect that for each status group the percentage of choices it gave would equal the percentage it received.

TABLE XXVIII
NUMBER AND PERCENTAGE OF CHOICES AND REJECTIONS DISTRIBUTED AND RECEIVED
BY EACH STATUS GROUP

	Status group 1	Status group 2	Status group 3
Number of choices distributed	120	420	156
% of total	17%	60%	23%
Number of choices received	227	392	77
% of total	33%	56%	11%
Number of rejections distributed	120	420	156
% of total	17%	60%	23%
Number of rejections received	35	282	379
% of total	5%	41%	54%

Now, if no other variables but these two (size and status) were operating in the direction of choices and rejections, we would expect to find that these percentages would be consistent from group to group; that is, since 17% of all the choices were made by status group 1, we would expect that of all the choices *received by* any one group, 17% of them would come from Group 1. Thus Table XXIX breaks down the expected choices re-

TABLE XXIX
EXPECTED PERCENTAGE OF CHOICES DISTRIBUTED FROM AND TO EACH STATUS GROUP

		Received to					Given out to			
		1	2	3			1	2	3	
from	1	17	17	17	*from*	1	33	56	11	100
	2	60	60	60		2	33	56	11	100
	3	23	23	23		3	33	56	11	100
		100	100	100						

ceived by any status group, showing that on the basis of differences in size and status only, each group's received choices should come 17% from Group 1, 60% from Group 2, and 23% from Group 3. Note that this percentage breakdown says nothing about the total *number* of choices *received* by any group, but only states the *proportion* which should come *from* every group.

Because every choice involves two individuals—the giver and the receiver—there is a second aspect to this question of expected percentages. Up to now we have dealt with the breakdown into percentages of choices

received by each group. Now we take up the expected percentage break-down of choices *distributed* by each group. In this we reason as follows: on the hypothesis that size and status are the only variables, it would fol-low that the percentage of the total choices *received* by any one status group would be equal to the percentage it received *of each group's choices*. That is, since Group 1 received 33% of all the choices, we would expect that of all the choices *distributed* by any one group, 33% of them would go to Group 1. Similarly, Table XXIX indicates that, on an expected percentage breakdown of the choices distributed, each group should give 33% of its choices to Group 1, 56% to Group 2, and 11% to Group 3.[21]

The expected allocation of rejections from group to group will differ somewhat from the allocation of choices. There will be no difference, how-ever, in the percentage of the total number of rejections which every group *gave out*, because this figure, like the corresponding choice figure, is a func-tion only of the size of the status group. Since each individual was required to make the same number of rejections as choices, the percentage figures will be the same. Group 1 made 17% of all the rejections, Group 2, 60%, and Group 3, 23%. This means, again, that of all the rejections received by any group, 17% of them should come from Group 1, 60% from Group 2, and 23% from Group 3. But because of the status differences between groups, the percentage of rejections will naturally be quite different for each group. Thus, Group 1, making 17% of all rejections, received only 5% of the rejections, and Group 3, making 23% of the rejections, received 54%. (See Table XXVIII.) Again, the expectation is that these totals would be constant from group to group if only size and status operate in the alloca-tion of rejections. That is, since Group 1 received 5% of all the rejections given out, 5% of each group's rejections should go to Group 1; and Group 3, receiving 54% of the total rejections, should receive 54% of the rejections given out by each group (including itself, of course). These expected rejection percentage figures will be found in Table XXX, which shows the percentage of each group's *received* rejections which should come *from* every group, and the percentage of each group's *distributed* rejections which should go to every group. It should be noted that the left-hand matrix in Table XXX is equivalent to that in Table XXIX, because the percentage of choices given out by each status group was the same as the percentage of rejections given out by each group; but that the right-hand matrix in

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[21] These percentages are only two ways of looking at the same thing, but the breakdown will prove useful.

TABLE XXX

EXPECTED PERCENTAGES OF REJECTIONS DISTRIBUTED FROM AND TO EACH STATUS GROUP

		Received to					Given out to			
		1	2	3			1	2	3	
from	1	17	17	17	*from*	1	5	41	54	100
	2	60	60	60		2	5	41	54	100
	3	23	23	23		3	5	41	54	100
		100	100	100						

Table XXX is not equivalent to that in Table XXIX, because obviously the percentage of choices received by any status group was not the same as its percentage of rejections received.

Now from these operations we have a set of percentages of choices and rejections given and received from status group to status group which we would expect to find if the hypothesis under investigation were true. This null hypothesis states that the only factors which control the number of choices and rejections between groups are differences in size and differences in status. Taking these two into account a series of expected percentages has been drawn up. The next step is to compare these with the percentages actually found. The percentages found are reported in Tables XXXI and XXXII. Table XXXI gives the breakdown of choices received and given out. That is, of all the choices received by Group 1, 21% came from Group 1 itself, 60% from Group 2, and 19% from Group 3. This table is similarly read *vertically* for the other groups, and shows what percentage of their total choices came from each group. The breakdown of choices given out is read *horizontally*, and shows, for example, that of all the choices distributed by Group 1, 40% went to other members of the same group,

TABLE XXXI

OBSERVED PERCENTAGES OF CHOICES DISTRIBUTED FROM AND TO EACH STATUS GROUP

		Received to					Given out to			
		1	2	3			1	2	3	
from	1	21	18	4	*from*	1	40	58	2	100
	2	60	59	65		2	33	55	12	100
	3	19	23	31		3	27	58	15	100
		100	100	100						

TABLE XXXII
OBSERVED PERCENTAGE OF REJECTIONS DISTRIBUTED FROM AND TO EACH STATUS GROUP

		Received *to*					Given out *to*			
		1	2	3			1	2	3	
from	1	6	13	22	*from*	1	2	30	68	100
	2	63	61	60		2	5	41	54	100
	3	31	26	18		3	7	48	45	100
		100	100	100						

TABLE XXXIII
CHOICES AND REJECTIONS RECEIVED BY STATUS GROUPS 1 AND 3 FROM THEMSELVES

	Status group 1		Status group 3	
	C	R	C	R
Total number received	227	35	77	379
Number from own status group	48	2	24	70
% from own status group	21%	6%	31%	18%
t	2.16		2.66	
P	.05		.01	

58% went to Group 2, and 2% to Group 3. This table, then, shows how each status group distributed its choices.

These observed percentages may now be compared with the expected values in Table XXX. It will be remembered that these expected values represent the percentages which would be found under the null hypothesis that differences between the groups with respect to size and status alone account for the distribution of choices. It will be seen that this hypothesis is thrown open to grave question. Whereas the observed percentages for Group 2 follow the expected fairly closely, such is not the case for the other two groups. Group 1 should have received 17% of its total choices from itself; but instead it actually received 21% from itself. The same status group should have distributed 33% of its choices to its own members, but the actual figure was 40%. The same kinds of discrepancies may be observed in the figures for Group 3. This group should have received 23% of its choices from its own members; it actually received 31%. It should have given 11% of its choices to itself; it actually gave 15%. Group 2, in both giving and receiving choices, followed quite closely the predicted figures. This 3×3 table yields a chi-square of 14.43, which with 4 degrees of freedom is greater than the value required for signif-

icance at a probability level of .01. Evidently, then, we can reject with reasonable confidence the hypothesis that no other factors besides size and status enter into the determination of between-group choice; and we can conclude that with respect to the group with very high status and the group with very low status, these groups exhibit a *consistent tendency to give to and receive from themselves a higher proportion of choices than we would expect*. Apparently there is some kind of preference for their own status group, whether it is high or low, that is contributing to the distribution of choices to and from these extreme status groups.

Is this self-preference of these two status groups compensated for by a diffused withdrawal of choices from the other two groups, or by a particular area of withdrawal? The answer to this question is seen from the inspection of the percentage matrices. Group 1 should have given 11% of its choices to Group 3, but only gave 2%; 17% of the choices received by Group 3 should have come from Group 1, but only 4% actually did. This shows that Group 1 was particularly hard on Group 3, much harder than Group 2 was. Group 2 was slightly more favorable toward Group 3 than would have been expected, giving Group 3 12% of its choices against 11% expected; and somewhat more of Group 3's choices came from Group 2 than would have been expected. The antagonism of Group 1 for Group 3 is reciprocated. Of Group 1's choices, 23% should have come from Group 3, but the actual figure was 19%; and whereas Group 3 should have given 33% of its choices to Group 1, it actually only gave 27%.[22]

Before carrying the interpretation of these results any further, it will be well to turn our attention from consideration of the patterning of choices among status groups to the patterning of rejections. The same theoretical considerations hold here. The null hypothesis again states that no other factors but size and status determine the distribution of rejections from group to group. The expected percentages of rejections received and given out have been given in Table XXX. If there were no self-preference or hostility among the different status groups the observed percentages would correspond to these expected values.

In Table XXXII is given the actual rejection percentages for each group. The left-hand matrix, read vertically, shows that of all the rejections Group 1 received, 6% came from itself, 63% from Group 2, and 31% from

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[22] This finding is contrary to that of Jennings, who from her case studies of leaders and isolates concluded that "the isolated and near-isolated are found to direct many more of their choices towards the leaders than towards other members" (13, p. 201).

Group 3; of all the rejections Group 3 received, 22% came from Group 1, 60% from Group 2, and 18% from itself. The right-hand matrix, read horizontally, shows that of all the rejections given out by Group 1, 2% of them went to itself, 30% to Group 2, and 68% to Group 3; and so forth for the rejections given out by the other two groups. These matrices indicate the same self-preference on the part of status Groups 1 and 3, with hostility toward the other, that was found in the choice matrices. Group 1, 17% of whose rejections should have come from itself, actually received only 6% from itself, and although it was expected to distribute to itself 5% of all its rejections given out, it only gave itself 2%. This group also gave more of its rejections (68%) to Group 3 than was expected (54%). Group 3, like Group 1, gave itself fewer rejections than expected, and gave Group 1 more rejections than expected. The chi-square for the rejection matrix is 16.64, also well above 1% significance, indicating that the discrepancies which we have observed by inspection of the percentages could only rarely have happened by chance.

It may safely be said, therefore, that the distributions of both choices and rejections between the various status groups show a highly significant departure from what would be expected, such that the top and bottom status groups give *themselves,* more choices and fewer rejections than they should, and give *each other* fewer choices and more rejections than they should.

Although the finding that the top and bottom status groups prefer themselves is interesting, it is not as surprising as the finding that each of these groups shows antipathy for the other. This second finding does not necessarily follow from the first, although it would if there were only two groups. It is true that if a group gives itself greater preference than would be expected, it must somehow compensate for this (since its total preference is limited) by withdrawing preference from others. However, there is no reason to expect that this would not happen at random or proportionately, so that an extreme status group would make up for its self-preference by withdrawing its preference without pattern from the other two groups. This does not happen, and Group 1 withdraws its preference much more from Group 3 than it does from Group 2; similarly Group 3 is much more hostile to Group 1 than to Group 2.

Although we know from the chi-square tests of the choice and rejection matrices that there is a tendency to self-preference or "clannishness" on the part of Groups 1 and 3, and "hostility" toward each other, these tests only indicate the overall departure of the matrices from expectancy

and do not answer two questions which naturally arise. These questions are, first, how significant is the specific self-preference and antipathy on the part of each status group, and second, which of the two groups demonstrates the greater degree of "clannishness" and hostility toward the other? There are several ways of making these tests. The most obvious would be to compare the deviation from expectancy of, say, the choices given Group 1 by itself and the choices given Group 3 by itself. Thus Group 1 gave itself 40% of its choices in contrast with an expected 33%, and Group 3 gave itself 15% of its choices in contrast to an expected 11%, and we could test to see which of these deviations is greater. However, there is another way to make these tests which has two advantages over this and other methods: it will not consider choice percentages only, but will take both choices and rejections into account; and it will yield not only comparative measures of self-preference but will also test the significance of each by itself.

For this test we will set up the null hypothesis that the proportion of *choices* received by any status group from any status group is equal to the proportion of *rejections* received by the same group from the same group. If only the size and status variables enter into the patterning of choices and rejections, and if there is no tendency for one status group to prefer or dislike any group (including itself), then these two proportions would be equal.[23] Thus, in testing self-preference, Group 1 is found to receive 21% of its choices from itself, and only 6% of its rejections from itself; if there were no self-preference, these two percentages would be equal.[23a] Similarly, 31% of Group 3's choices come from itself, but only 18% of its rejections are self-inflicted. For Group 1, this gives a t of 2.16 ($P=.05$), and for Group 3 a t of 2.66 ($P=.01$). (Table XXXIII.) This test tells us, then, that when self-preference or "clannishness" of the two extreme status groups is tested by considering both their choices and rejections of themselves, it is found that both groups exhibit significant self-preference, and that although the difference between groups has not been tested for significance, it looks as though the lowest status group exhibits greater self-preference than the highest status group.

Before going further into explanations of this finding, we wish to test

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[23] Note that we must use proportions received, not given; Tables XXIX and XXX show that while each group expects to *receive* the same percentage of choices as rejections *from* any group, it is not true that each group expects to *distribute* the same percentage of choices as rejections *to* any group, even though each group expects to distribute the same total number of choices and rejections.

[23a] I.e., both would be 17%.

in the same manner the hostility or aversion of these extreme status groups toward each other. It has already been noted that this antipathy accompanies the self-preference, but we do not know as yet how significant these antipathies are in divergence from expectation, nor which is the more intense. Using the same reasoning as in the previous test, we can say that under the hypothesis of no aversion, the proportion of Group 1's choices which come from Group 3 would be the same as the proportion of Group 1's rejections from Group 3; and similarly for Group 3's choices and rejections from Group 1. For the antipathy of Group 3 for Group 1, t is 1.78 (P=.10); for the antipathy of Group 1 for Group 3, t is 3.63 (P=.01). (Table XXXIV.)

TABLE XXXIV

CHOICES AND REJECTIONS RECEIVED BY STATUS GROUPS 1 AND 3 FROM EACH OTHER

	Status group 1		Status group 3	
	C	R	C	R
Total number received	227	35	77	379
Number from opposite status group	42	11	3	82
% from opposite status group	19%	31%	4%	22%
t	1.78		3.63	
P	—		.01	

The consideration of both these pairs of results is highly instructive. It might have been expected that since Group 3 exhibited such significant self-preference, this would be accompanied by its exhibiting significant aversion toward Group 1. That such is not the case is the result of two variables in the situation which help to clarify just what is involved here. One is the fact that the test took rejections as well as choices into account. The other is the fact that there are not only two status groups. The key is found in the right-hand matrices of Tables XXXII and XXX. These tables show how the role of Group 2 in the rejection structure entered into the result just obtained. Whereas each of the extreme status groups distributed just about the expected proportions of their choices to Group 2, they did not so distribute their rejections. Group 1 gave Group 2 fewer rejections than was expected, and concentrated its rejections on Group 3. Group 3, on the other hand, while giving more of its rejections to Group 1 than would have been expected, also gave a good deal more to Group 2. This accounts for the failure of the self-preference and hostility to conform to the same pattern.

We know, therefore, that although both extreme status groups exhibit

significant self-preference (with that of Group 3 apparently somewhat greater), there is substantially greater aversion on the part of the highest status group toward the lowest than vice versa, and that this is chiefly accounted for by the tremendous focusing of rejections from Group 1 on to Group 3, compared to a relative diffusion of Group 3's rejections over both other groups.

The very striking in-group preference of status groups 1 and 3 leads to the conclusion that some sort of *awareness of status* may be present at the very top and the very bottom of the social structure. One cannot prefer one's own status group to other status groups unless one knows somehow who the other members of one's status group are. This implies, therefore, two facts: that by and large people at the extremes know not only the status of others, but also "know" their own status, and they tend to prefer others in the same status range as they themselves. The literature is relatively bare on this aspect of group structure, and much more research is necessary for full interpretation. For example, it is not apparent from these results whether this "consciousness of kind" with regard to status is a very conscious, obvious awareness of those in one's own status group, or whether it is an almost unconscious feeling of attraction toward others with equivalent status.

Information on this point could be obtained by asking subjects of a sociometric test to name the persons they think are the most popular in their group, and the persons they think are the most unpopular; and also to state where they think they themselves stand on popularity within the group being tested. Comparison of these answers with the results of the sociometric test would show to what extent the self-preference noted here for extreme status groups is a fully conscious process. Since this information was not asked for in the present project, it is not possible to frame a conclusive answer to these questions; it is, however, possible to formulate hypotheses based on these results which might predict the outcome of the inquiry suggested above. This may be done as follows.

It has been shown (Table II) that status groups may be significantly differentiated by the ratings they receive on the Alpha scales. This is a fairly good indication that people in general are aware of the popularity of others, insofar as the latter is reflected by mean ratings received on these scales. It has also been shown (Table VII) that on these same scales the self-ratings of the status groups were not distinguishable. These results suggest that if the self-preference of the extreme status groups is examined in terms of awareness or unawareness, it may be found that part of the

mechanism lies in both realms: the aspect of self-preference which consists in recognizing the status of others may be conscious, whereas the aspect which consists in recognizing one's own status in order to affiliate may be unconscious. This hypothesis is not water-tight, however, for several reasons. It may be argued that the existence of self-preference does not imply an awareness of the two aspects, status of others and status of self, but may only imply a "consciousness of kind" without any hierarchical awareness of status ranking at all. It may further be argued that the fact that an individual standing near the "bad" end of a trait scale fails to rate herself so low does not necessarily mean she would not be aware of her low status in a particular group. Further research along the lines described above should throw light on this problem, and may or may not confirm the hypothesis set up here that individuals are more likely to be aware of the status of others than they are to be aware of their own status.

Attention may now be turned to the other side of the self-preference coin—the antipathy of the extreme status groups for each other. It might have been expected that the members of the lowest status group would, from envy and resentment, focus hostility upon the highest status group. That they do not do this seems to indicate that this bottom group may be better adjusted in terms of individual mental hygiene than their low adjustment in relation to the group would indicate. However, nothing very conclusive can be said on this point because the hostility of Group 3 toward Group 1 was neither clearly attributable to chance nor very significant. The aversion of Group 1 to Group 3 is less ambiguous. This has been found to be highly significant,[24] and the question may well be asked why the top status group, presumably the most secure individuals, should exhibit such extreme antipathy for those with the lowest status, from whom, presumably, they have least to fear in terms of threat to their own status. To answer this question it is necessary first to postulate that girls with high status know fairly accurately who the low status individuals are. This is a reasonable supposition, since the very fact of the significant animosity toward the lowest group from the highest group suggests ability on the part of the latter to identify the former.

It may also be suggested that individuals in the highest status group are not as secure in their position as might be expected. It is ordinarily thought that the higher one's status the more secure one is, but this relates

[24] This finding is contrary to that of Jennings, who concluded that "leaders . . . stand as mentors 'protecting' the isolates" (13, p. 200).

to the concept of status used in the world at large, which is different from the meaning of the word as used here. The components of worldly status (e.g., wealth, family position, etc.) are of a relatively permanent nature and are not usually open to jeopardy by other individuals. However, social status in the sense of popularity is by definition dependent on the behavior and opinions of others. Hence there is no reason to assume that girls with high sociometric scores are exceptionally secure, and clinical studies at the college level would be required to establish the general rule in this matter. If the top status group are not necessarily highly secure, it follows that their reaction toward the lowest status group may be interpreted as a status-preserving mechanism. Rather than exhibit hostility toward the middle status group, who are, potentially at least, competitors for high status, and upon whom Group 1 depend to support their high status, the highest group can much more safely direct antagonism at the relatively defenseless lowest group, whom they can identify as such, and whose reciprocal hostility they need not fear. The basic support of the status structure depends largely on Group 2, which is much the largest of the three groups, and this means that it is in the interest of Group 1 (a) to "go easy" on their chief support, Group 2, and (b) to lead the way in channeling hostility on to the lowest group and thus provide a defenseless target for the antagonism of the whole group.

Another possible explanation for this lies in the results of the analysis of variance of mean rating received on the Beta scales (Table II). This analysis showed that both Group 1 and Group 3 tended to rank lower than Group 2 on such traits as dominating—submissive and stubborn—yielding; this may help to account for Group 1's hostility toward Group 3, since it is probably likely that acceptable individuals who are dominating and stubborn will be more antagonistic toward less acceptable individuals who are also dominating and stubborn than toward less acceptable individuals who are submissive and yielding.

These considerations may help to explain the results of the divergencies from expectation in the preference distribution from status group to status group. It must be emphasized, however, that the hypotheses growing out of this study can only be tentative until tested by further research along the lines suggested.

We turn finally to the exploration of some other features of choices and rejections. In Table XXXV is shown, for each house separately and for the total, the number of people (y) who fall into each choice and rejection grouping (x). It will be noted that the general tendency is for frequencies

TABLE XXXV
FREQUENCY DISTRIBUTION OF INDIVIDUALS BY NUMBER OF CHOICES AND REJECTIONS
RECEIVED

| | Number of choices or rejections received | | | | | | | |
	0-5	6-10	11-15	16-20	21-25	26-30	Over 30	
Choices	14	11	15	11	4	2	1	58
Rejections	20	14	7	3	3	7	4	58
	34	25	22	14	7	9	5	116

Chi-square $= 13.66$
$P = .05$

to be higher in the left-hand portion of the table than in the right-hand portion; in other words, more people tend to receive relatively few choices and rejections than relatively many choices and rejections. It will also be noted that the rejection frequency is above the choice frequency at the left, crosses it early, stays beneath it till near the end, when it again exceeds the choice frequency and remains above it. This shows that there seems to be a uniform pattern operating, such that more people receive a small amount of rejections than receive a small amount of choices, and also more people receive a large number of rejections than receive a large number of choices; but that in the middle range, more people receive a moderate number of choices than receive a moderate number of rejections. After noting here that these trends appear to be operating similarly in all three houses, we will no longer refer to the separate houses.

For the tendency of both the choice and rejection frequencies to be higher for low numbers of rejections than for high numbers of rejections there is a non-social explanation. Under the conditions imposed by the sociometric test, where each subject was allowed three choices and rejections under each criterion, the probability of being chosen or rejected was always substantially smaller than the probability of not being chosen or not being rejected; this point is discussed more fully elsewhere. The fact that p is less than q has the effect of skewing the distribution to the right, so that the mode is found farther left than would be expected from a normal distribution. This property of the curves, therefore, is merely an artifact resulting from the test conditions.

There is, however, no such mathematical explanation for the other peculiarity of these data: the fact that the rejection frequency is higher

at the ends and the choice frequencies higher in the middle.[25] Before devoting much attention to this difference it is necessary to consider the possibility that there really is no significant difference between the choice and rejection distributions and the fact that one is higher sometimes and the other higher another time could have happened as a result of random forces having nothing whatever to do with the group structure or the nature of choice and rejection. We can test this hyothesis by the appropriate method for determining goodness of fit, using for each interval the values for choices and rejections listed in Table XXXV. This does not test the deviation of either distribution from expectancy, but their deviation from each other. The result, a chi-square of 13.66 (P=.05), indicates that there is little basis for supposing that chance differences account for the peculiarities of the two lines. Hence we must seek explanations in the social situation itself.

In order to understand more fully the implications of these data, it seemed sensible to turn to the sociometric plot for the pooled data on the triangular coordinate paper. (Figure 1: this figure is reinserted below to facilitate reference.) In terms of this graph, the meaning of the irregularities of the lines can be expressed as follows: there are more people (points) very close to the Rejection base line than there are very close to the Choice base line, and there are also more people very far (perpendicularly) from the Rejection base line than correspondingly from the Choice base line; but there are more people clustered about the mean Choice line than about the mean Rejection line. In other words, if one looks only at the thin (rejection) lines and disregards all the others, it may be seen that the concentration of points with respect to these lines is bimodal, mostly falling around the lower fiducial limit with a smaller concentration far above the upper limit, and a sizable gap between the mean line and the upper limit. On the other hand, if one considers only the broken (choice) lines, disregarding the others, it appears that the dots are more concentrated in the area between the two fiducial limits, with comparatively few outside them. This empirical observation suggests a further test of significance, not for the difference between two lines on a graph, but between the numbers of people above and below the different fiducial limits. We ask the question, therefore, "Are there more people who are very highly rejected than there are people who are very highly chosen, and are there more people who are rejected very seldom than there are people who are chosen very seldom; and

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[25] The binomial expansion was the same for both, so that there is no reason on these grounds to expect two different sets of frequencies.

are there more people near the middle with respect to choices than with respect to rejections?" It is possible to see from inspection of the triangular graph that this is so, but we wish to apply a more rigorous test. Before this is done, however, it is advisable to make certain changes. Inspection of Figure 1 shows that if we use the ordinary fiducial lines in determining categories we will not get a true picture of the extent of the discrepancies we seek to measure. For example, the people who are above the fiducial choice line are mostly not very far above it, whereas those who are above the corresponding fiducial rejection line are quite substantially above it. A similar difference exists with respect to the lower limits. This suggests that for the purpose of the test we are about to make, a more meaningful result may be obtained if we extend the fiducial limits even farther from the means. By pushing these limits from $P=.01$ to $P=.001$, we will have four new categories for both choices and rejections: (1) Those who received 23 or more choices or rejections, the probability of such an event being .001. (2) Those who received more choices or rejections than the mean (12), but less than this fiducial limit. (3) Those who received the mean or fewer choices or rejections, but not so few as to put them in the next category. (4) Those who received 3 or fewer choices or rejections, the probability of such an event being .001.[26]

In Table XXXVI these categories have been filled with the appropriate numbers of individuals. Since the right-hand marginal totals are both 58 (the total number of subjects—every subject is counted twice, once on her choices and once on her rejections), the expectation is that each pair of boxes for choices and rejections will contain an equal number. Inspection indicates a very striking overweight in the Rejection boxes at the two

TABLE XXXVI

NUMBER OF INDIVIDUALS RECEIVING VARIOUS AMOUNTS OF CHOICES AND REJECTIONS

	3 or less (P .001)	4-12 (.001 P .5)	13-22 (.5 P .001)	23 or more (P .001)	
Choices	5	29	19	5	58
Rejections	14	24	7	13	58
	19	53	26	18	116

Chi-square $= 13.82$

$P = .01$

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[26] The reason why these new limits are not equidistant from the mean is that the skewness of the distribution has become more noticeable this far out on the tails of the curve.

extremes, and in the Choice boxes in the two middle portions. The chi-square for this table is 13.82 ($P=.01$), which gives us reasonable confidence in the significance of the failure of the patterns of choices and rejections to conform to each other.

We are now confronted with a clearcut result, the interpretation of which is far from obvious. What forces are operating in the social situation which account for the tendency for there to be more under-rejected individuals than under-chosen individuals, more over-rejected individuals than over-chosen individuals, and more moderately chosen individuals than moderately rejected individuals? The fact that the rejection frequencies are higher at both ends seems wholly inconsistent. One might expect that if it were higher at one end it would be lower at the other end, because one might reason as follows: since in general "popular" individuals receive many choices and few rejections, while "unpopular" individuals receive many rejections and few choices, if the left end of the distribution is considered it would appear that there are more popular people, in general, than there are unpopular people; but if the right end of the distribution is examined, it can only be concluded that there are more unpopular people than there are popular people. This apparent contradiction is partly explained by the looseness of an assumption made above. While it is true, as stated, that popular individuals generally receive many choices and few rejections, it does not necessarily follow that all those who receive few rejections are popular: they may be merely *not mentioned*. Similarly, those who receive very few choices are not necessarily unpopular but may also be not mentioned. Consequently, the left ends of the distribution we are considering are made up not only of the very popular and the very unpopular, but also of some little noticed individuals—who lie in the upper Indifferent vertex of the sociometric triangle. Hence we may modify the expression used above, and say more exactly that there are more unnoticed and popular than unnoticed and unpopular individuals, and more highly noticed and unpopular than highly noticed and popular individuals. This rephrasing is now reminiscent of the finding previously discussed that high noticeability is associated with a preponderance of rejections, and low noticeability with a preponderance of choices. Thus, by approaching the data from a different starting point, we have arrived at a restatement of an earlier generalization.

There are some stones left unturned, however. Is there anything inherent in the operation of choice and rejection which plays a part here? A clue is given in the analysis of variance of the intensity of choices and rejections received by the various status groups (Table XXXVII). This

TABLE XXXVII

FREQUENCY DISTRIBUTION OF CHOICES AND REJECTIONS PER FILLED BOX RECEIVED BY
EACH STATUS GROUP

		Choices received					Rejections received			
		Group 1	Group 2	Group 3			Group 1	Group 2	Group 3	
Frequency per filled box	1	24	46	6	76	1	9	71	38	118
	2	15	31	3	49	2	8	37	25	70
	3	15	24	3	42	3	2	23	41	66
	4	32	53	14	99	4	1	17	42	60
		86	154	26	266		20	148	146	314

<div style="text-align:center">

Chi-square = 3.65   Chi-square = 34.10

P = .75   P = .01

</div>

showed that there was no notable difference between status groups in the intensity of choices received, but there was a highly significant difference in regard to rejections, such that the lower the status of the group, the more highly focused were the rejections upon its members. It should be noted that these analyses were performed separately for choices and rejections received, and that this finding is wholly independent of the finding that choices are in general more highly focused then rejections. To obtain a clearer picture of the differences between status groups with respect to focusing of choices and rejections received, we may make use of the intensity frequency distribution, of choices and rejections per filled box, as we have done before. Since the analysis of variance showed no significant house or interaction variance, we can legitimately pool all the data and construct two 4×3 tables as indicated in Table XXXVII. It will be noted that these three status groups are fairly similar (as we might expect from the low F in Table XXVII), and that all three conform fairly well to the total choice distribution. However, when we examine the three rejection distributions for the status groups, the result is very different. Whereas the total rejection distribution slopes down to the right, and the rejection distribution for status groups 1 and 2 at least approximate this pattern, the values for status group 3 exhibit a most striking deviance from the general trend: it is concave upwards and resembles the total choice curve. This means that while for the top and middle status group, the rejections they received were dif-

fused, mostly falling into the 1 and 2 categories, the rejections received by the lowest status group are heavily weighted in categories 3 and 4. Chi-square tests for the two 4×3 tables are shown in Table XXXVII. The result is a chi-square of 3.65 for the choice distribution ($P=.75$), and a chi-square of 34.10 for the rejection distribution ($P=.01$). All this does not tell us essentially more than we learned from the high F in Table XXVII, but it does pick that result apart and show in more detail exactly what is happening.

Now what is the significance of these findings? They suggest an important differentiation in the actual functioning of the choice and rejection processes. We know already that *rejections are more diffused than choices*, and that more people receive at least one rejection than receive at least one choice. We also know that the greater focusing of choices received occurs in all status groups (see means in Table XXVII). Therefore, we can say that the choice process works in such a way that a person will tend to be chosen fairly consistently by a comparatively small number of others, whereas in the rejection process, a person tends to be rejected by more people, but less strongly. It follows that in general, rejection implies greater agreement among the group, but less intensity, than does choice; and this means that favorable attitudes towards a person are lodged in a *smaller number of people* than are unfavorable attitudes.

Now with these differences in mind, let us examine what may be called motion along the choice and rejection continua. There is no actual "motion" involved, for it is our attention and not the subjects which moves, just as when in a row of lights each light is turned on and then off in turn one has the impression of motion although no bulb has moved. What is happening at the bottom of the choice and rejection continua is this: rejections are widely distributed and many people receive them; choices being more concentrated, less people receive them. This explains why more people receive a small number of rejections than receive a small number of choices. As we move into the middle ranges on the two continua, the intensity of choices decreases somewhat while the intensity of rejections increases, so that more people will receive this moderate amount of choices than will receive a corresponding number of rejections. Now as we move into the high areas of choice and rejection, different things happen. The number of choices received increases primarily by the addition of persons choosing, and since they are choosing consistently, the result is a sufficiently large increment in number of choices received to push the individual above the choice fiducial limit—but not very far above, and in general not near the fiducial in-

difference limit, since she was never widely noticed but only strongly liked by comparatively few people. In contrast to high choice process, the high rejection process is quite different. It will be recalled that a person is in general rejected by comparatively many people, though not intensely. She becomes highly rejected not by adding a few consistent rejecters (as in the operation of high choice) but by becoming so increasingly obnoxious to those who already mildly rejected her that they greatly increase the intensity of their rejections upon her. Since rejections were more widely based than choices, and more widely distributed, the result will be that more people will receive a large number of rejections than will receive a large number of choices. Furthermore, because the increase in rejections received by a highly rejected individual is much greater than the corresponding increase in choices required to produce a highly chosen individual, the highly rejected will be pushed much farther above the fiducial rejection limit, and much higher on the indifference scale, than will the highly chosen; and this accounts for the preponderance of the rejected among the highly noticed.

In other words, to add to a moderate amount of choices, an individual must be chosen by more people, since she is already receiving many choices from those already choosing her and there is not much room for the intensity to increase; to add to a moderate amount of rejections, an individual need only have the number of rejections she is receiving per person increased, and since this is likely to be small, there is greater room for increased focus from and on individuals, meaning more people highly rejected and more highly rejected people highly noticed. Motion along the choice continuum may be compared to *addition:* increase in choices received is accomplished by adding people choosing more than by increasing intensity; whereas motion along the rejection continuum may be compared to *multiplication:* increase in rejections received is accomplished by multiplying the intensity from an already large base. From this analogy it is obvious why rejections will show a much larger increase than choices, and why more people will be highly rejected than highly chosen.

This discussion has attempted to consider the findings from Table XXVII and Table XXXVII and to relate them to each other in such a way that the phenomena they illustrate fit together in a meaningful scheme. Taken separately these results were often very perplexing, and did not yield to ready hypotheses. But when the relationships between them were seen, it was possible to fit them all into a simple and admittedly superficial framework from which a body of integrative interpretation emerged.

The findings reported here suggest some interesting and heretofore

unsuspected characteristics of group status and the patterning of choices and rejections. It is to be hoped that additional research will explore and interpret these phenomena more fully.

SUMMARY AND CONCLUSIONS

This study has attempted to investigate certain group characteristics by means of data obtained from sociometric tests and rating scales, and using as subjects the members of three small dormitories at a girls' college. Emphasis was also placed on methodology and the improvement of techniques.

A pretest indicated the existence of two different kinds of rating scales, one of which (called the Alpha scales) appeared to run from "good" to "bad" in terms of trait desirability by the population studied; the other kind (called the Beta scales) seemed to run from "bad" to "good" to "bad" in social desirability. These two different kinds of scales yielded consistently different results, and their differentiated use suggested similar pretesting of rating scales to determine empirically the kind of scale being used.

A method for determining status groups was developed, which took into account both choices and rejections, and which yielded a meaningful and workable division into high, middle, and low status groups.

Ratings received on Alpha scales were found to be associated with sociometric status in the group, suggesting that there is a relationship between the traits measured by these scales and the status of the individuals possessing them. Thus girls with high status were rated by the group as generous, enthusiastic, and affectionate, while girls with low status were generally rated more stingy, apathetic, and cold. Ratings received on Beta scales were found to be associated with noticeability, such that there seemed to be a relationship between these personality traits and the extent to which subjects possessing them were noticed by the group. On all rating scales the house averages were so close that common reference points for the population seemed to exist. No relation was found between status and harshness of ratings assigned (on Alpha scales). No association was found between status and self-ratings, when the effects of difference in rating received were eliminated. On the enthusiastic—apathetic and the affection-nate—cold scales significant and moderately high correlations were observed between self-ratings and ratings received. The correlations tended to increase with status, but not significantly. On the generous—stingy scale no such correlations were found at all.

Insight was quantified as a discrepance between an individual's view

of herself and the consensus of her associates living about her. No significant relation was found between insight and group status although there was a trend in the direction of greater insight with higher status. On the basis of these findings it seems doubtful that insight (as here defined) is necessary for good social adjustment. Small but significant correlations were observed between insight (self-depreciation) and harshness of ratings assigned suggesting that those whose standards for rating are high tend somewhat to apply those same standards in rating themselves. It was suggested that the concept of "group insight" could meaningfully be introduced to describe the extent to which an entire house rated itself accurately in terms of ratings received. One house was found to exhibit a quite notable lack of group insight; another house also lacked insight, at a somewhat lower level of significance; the third house was found to show good group insight. On one scale in particular (affectionate—cold) the subjects in general tended to overrate themselves.

Projection was dichotomized as either present or absent, for each subject on each scale. No relation was found between projection and insight, nor between projection and group status. Some doubt was thrown on certain of Sears' results dealing with the relation of projection to insight. The value of the correlational approach to projection was questioned except as a general method for isolating subjects who tended to project consistently.

It was found that those subjects who were highly noticed by others were more likely to be noticed unfavorably than favorably; that is, they were more likely to have low status than high status. Those who were very unnoticed by the group were more likely to be liked than disliked. It appeared that high status and high noticeability may be mutually exclusive. The traditional picture of the low-status "follower" was questioned on the basis of these results.

A method for measuring group cohesion was developed by further subdividing the status groupings until there were five status groups: two high, two low, and one middle. It was suggested that the relative number of people in the two extreme status groups provided a rough measure of the integration or cohesion of the house: the more heavily weighted these "tails" of the distribution, the greater the status differentiation and the greater the unevenness of the distribution of rewards within the group, and hence the less cohesive and solidary the house. It was found that the three houses differed with respect to their group cohesion, and that the cohesion ranking corresponded to the ranking of the houses with respect to group insight. An index of cohesion based on the variance of status was found to yield

similar results. These findings suggested that the picture of a group obtained from rating scale data may be connected with the independently obtained picture of its sociometric structure.

A method for measuring intensity of choice and rejection was proposed, and it was observed that rejections seemed to be more widely distributed and less intense than choices. When this was tested, a highly significant difference was found between the intensity of the two reactions, such that choices tended to be more concentrated or focused upon relatively few people, whereas rejections tended to be diffused or spread over relatively many people. Speculative explanations were advanced to account for this difference.

When the relation between intensity of reaction and status was considered, it was found that no relation appeared between status and intensity of choices or rejections given out, indicating that individuals of every status tended to concentrate their choices or rejections similarly. There was, however, a relationship between status and intensity of rejections received, such that the lower the status of individuals the more highly focused upon them were the rejections they received. An insignificant tendency was observed for the intensity of choices received to behave in the same way.

The distribution of choices and rejections from status group to status group was examined, and a method suggested for determining self-preference. It was found that the top and bottom status groups both showed significant self-preference, such that they tended to give themselves more choices and fewer rejections than expected. This was not true of the middle status group. Furthermore, these extreme groups withdrew their preference much more from each other than from the middle status group. The antipathy of the top status group for the bottom status group was found to be highly significant, but that of the bottom group for the top group fell short of formal significance. Explanations of these phenomena were suggested, but could not be conclusive until tested by further research. Specific suggestions were made concerning the next steps which would throw additional light on the processes involved.

Finally, significant differences were noted between the distributions of subjects according to the number of choices and rejections received, such that more individuals received a small number of rejections than received a small number of choices, and more also received a large number of rejections than a large number of choices, but more received a moderate amount of choices than a corresponding amount of rejections. By considering information obtained from other findings, an attempt was made to account

for this peculiarity and to relate it to other features of group structure (such as differences in status and noticeability) and the nature of choice and rejection.

The character of this study was exploratory, and its chief purpose has been to suggest, by means of new approaches and methods, some areas in the study of groups which may profitably be more thoroughly investigated. Research in this field is still at a primitive stage; it would seem that more work at this level is indicated to lay the foundations for the development of a wider body of knowledge.

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RELATIONAL ANALYSIS: AN EXTENSION OF SOCIOMETRIC METHOD WITH EMPHASIS UPON SOCIAL PERCEPTION[1]

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At a broad level of generality, understanding of an interpersonal relationship depends upon the availability of information regarding two of its aspects: the first of these is the nature of the response of each person to the other. The second aspect consists of the *perception* that each person has of the other person's response toward him. The analysis of any interpersonal relationship must consider these two components.

Standard sociometric procedures provide simultaneously two types of data about any member of a group: (a) information about *his* affective response to the others and (b) information about others' affective response to him. Since the latter is the result of the choices and rejections of *all the other* members of the group, one might add that the affective response of the group to the subject has a *consensual* nature. Behavior, however, does not consist of the response to the properties of the stimulus field objectively or consensually specified but, rather, of the reaction to what is perceived[2] by the subject. Therefore, while standard sociometric data constitute very useful information, understanding of behavior in interpersonal situations could be advanced further if, in addition to a consensual view of the situation, one had access to information regarding the subject's view of it. One may find, for example, a highly chosen subject making only one choice, or, a highly rejected member making many choices. While various explanations are possible for either instance, the picture would acquire immediate transparence if one knew that this particular popular person is not aware of his success but, on the contrary, perceives himself as highly rejected. Similarly, the surprising response of the rejected subject could be understood better if it became apparent that this subject "felt" highly accepted. It must then be clear that the choice and rejection behavior of members of a group could be better comprehended if, in addition to an objective description of

[2] "Perception" and "perceiving" in this paper are used in a broad sense to include inferences, and remembered stimuli, not necessarily present in sensation at the moment.

the social field (choices and rejections received by a subject) one also knew how the subject perceived this social field.

In this paper is described a method by means of which, in a single operation, data on the subject's perception of the situation can be gathered, together with the information usually obtained by standard sociometric procedures.

The method is an extension of the sociometric choice and rejection technique. The unusual features are the addition of a "guessing," or perceptual procedure and a special method for analyzing and utilizing the data.

The "Guessing" or Perceptual Procedure (the "Perceptual Response")

By a "guessing" procedure is meant that subjects are required to *guess who will choose and reject them* in addition to the usual sociometric choices and rejections made by them. The number of choices, guesses, rejections, and guesses of rejection is left unrestricted. The guessing procedure adds the perceptual component to the standard sociometric method. As a first example of the *difference* made by this addition consider the following case. Subjects who are indistinguishable by standard sociometric methods (Fig. 1a) may be found to differ very importantly when the subjective element (the guess) is introduced (Fig. 1b).

Subjects A, B, C and D in Figure 1 all choose each other and from the
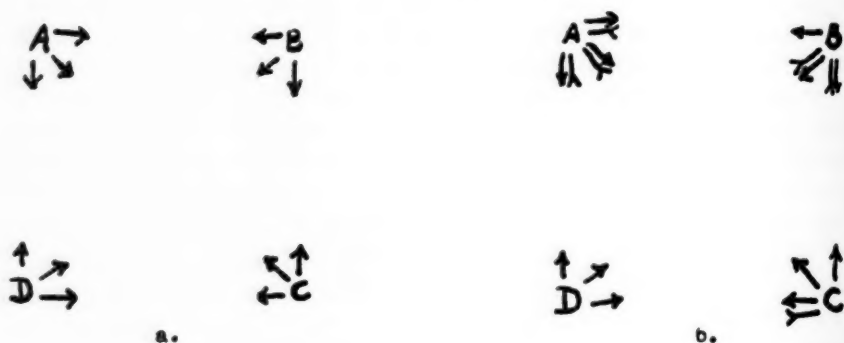
Figure 1.

a. Standard sociogram representation

b. Relational Analysis representation

Legend.

($\longrightarrow$ choice)

($\prec$ guess)

choices alone it is not possible to detect any differences among them. The guesses, however, indicate that:

A thinks that he is chosen by all the others,

B thinks that he is chosen by C and D but not by A,

C thinks that he is chosen by D *only* and

D does not think that he is chosen by anyone.

It becomes apparent that, subjectively there must be a great difference between A and D.

Analysis and Utilization of Data by Means of a Special Classification of Diadic Relationships

After crosschecking the raw data obtained from each subject with those of every other subject, the following eight categories of information become available on each individual (S):

a. (———>) whom S chose,

b. (———<) who S guessed would choose him,

c. (<———) who chose S,

d. (>———) who guessed that S would choose him,

e. (– – – –>) whom S rejected,

f. (– – – –<) who S guessed would reject him,

g. (<– – – –) who rejected S, and

h. (>– – – –) who guessed that S would reject him.

These eight components of the interaction between a subject and another member of the group will be referred to as "bonds" and will be represented by the symbols in brackets.

As an example of the way a subject's data is analyzed in terms of his relationships with members of his group, consider the case of Paul, one of sixteen students living in a college fraternity house. After crosschecking Paul's protocol with those of all the other subjects, his data is shown in Fig. 2, page 94.

The relationships between Paul and the other fifteen members of his group can be seen at a glance, from the column at the extreme right.

Paul has a positive relationship with Peter: they choose each other and each feels that the other will choose him (S⟹⟩ ⟩⟸O).

Paul and Joe also choose each other, but whereas Paul feels confident of Joe's reciprocation, Joe does not express himself on this point (S⟹⟩ <⟸O).

Paul chooses Al and guesses that Al will choose him; Al reports his awareness of Paul's approach but does not reciprocate it (S⟹⟩ ⟩–--O).

Subject: Paul								
S chooses	S feels chosen by	S is chosen by	These subjects feel S chooses them	S rejects	S feels rejected by	S is rejected by	These subjects feel rejected by S	S-O Relation-ship
→	—<	←	>—	--→	---<	←--	>---	
Peter	Peter	(Peter)	(Peter)	—	—	—	—	
Joe	Joe	(Joe)	—	—	—	—	—	
Al	Al	—	(Al)	—	—	(Al)	—	
—	—	(Dick)	(Dick)	—	—	—	—	
—	—	—	—	Bill	Bill	(Bill)	(Bill)	
—	—	—	—	Tom	—	(Tom)	—	
—	—	—	—	—	—	(Neal)	(Neal)	

Figure 2.

Paul is chosen by Dick who feels chosen by Paul, but the latter reports no awareness of Dick's positive feeling for him (S $\geqq$ O).

On the negative side, Paul and Bill reject each other and each seems aware of the other's feelings (S---→ >---O).

Paul and Dick also reject each other, but neither reports recognition of the other's feelings (S---→ ←---O).

Paul is rejected by Neal who also feels rejected by Paul, but Paul has no bonds in the direction of Neal (S >---O).

Eight members do not appear on his protocol: they are not mentioned by Paul nor Paul by them.

To go back to the classification then, any diad can be described in terms of those affective and perceptual elements of a two-person relationship

that are expressed by choice, rejection, and their "guesses," and can be assigned to one of the eighty-one diadic categories possible. These constitute an empirical-theoretical *classification* of relationships between pairs of individuals. This feature of the method accounts for the name Relational Analysis given to it.

Theoretically, the eight bonds would combine in 256 ways.[3] On the logical ground, however, that subjects do not choose as well as reject the same individual, or guess that they are chosen as well as rejected by the same person, one can conclude that the total number of theoretically possible varieties of diads is equal to the sum of all combinations *not* containing incompatible bonds (e.g., choice and rejection). It thus becomes apparent that the most complex relationship is the one with only four bonds, since any fifth bond would be incompatible with one of the other four. This reduces the possible relationships from 256 combinations to 81, plus the case where no bonds whatsoever exist between two individuals.[4]

For complete list of diadic categories see Table I, p. 96.

Apart from being a convenient method for ordering the complex data of Relational Analysis, this classification has several other useful features:

1. It is a way of describing a person, in terms of his perceived and actual relationships to other group members.
2. It is a method by means of which interpersonal relations between pairs of persons or sub-groups can be systematically classified and analyzed.
3. It provides a systematic way of comparing members of a group to one another.
4. It provides another method for describing, in a limited but important way, the cohesion of a group.
5. Study of deviations from the expected frequencies of the various types of diads have thrown light on certain regularities in the affective and perceptual aspects of interpersonal relationships.
6. It provides a classification system of inherent interest since it is

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[3] $$\sum_{i=0}^{i=8} C_i^8 = 256$$

[4] If the focus of attention is on the diad itself rather than on the members of the group, the number of different diads can be considered to be forty-one rather than eighty-one. If, however, the analysis is concerned with the subjects themselves, then it makes a difference whether subject S is related to Other by a choice (S———> O) or by a choice-received (S <———O). From an impersonal point of view on the other hand, the two diads above are identical.

Table 1.
CLASSIFICATION OF DIADS DERIVED DIRECTLY
FROM RELATIONAL ANALYSIS PROCEDURE
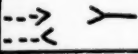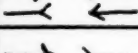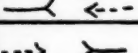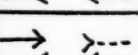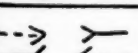
Legend:
→ chooses
⤙ feels chosen by
--→ rejects
---< feels rejected by

All Positive Bonds	Mixed Bonds	Mixed Bonds	Mixed Bonds	All Negative Bonds

Classification table of diads with sociometric bond symbols.

The following Table 2 gives the meaning of some of the relationships. Column 4 in the previous table was chosen because of the great variety of cases it exemplifies.

Table 2.

Operational meaning of the diads shown in column four Table 1.

Diad	S	O
(symbols)	S rejects O S feels rejected by O	O feels chosen by S ———
(symbols)	——— S feels chosen by O	O feels rejected by S O rejects S
(symbols)	S chooses O S feels chosen by O	O feels rejected by S O chooses S
(symbols)	S chooses O S feels rejected by O	O feels chosen by S O chooses S
(symbols)	S chooses O S feels chosen by O	O feels chosen by S O rejects S
(symbols)	S rejects O S feels chosen by O	O feels chosen by S O chooses S
(symbols)	S chooses O S feels chosen by O	O feels rejected by S O rejects S
(symbols)	S rejects O S feels rejected by O	O feels chosen by S O chooses S
(symbols)	S chooses O S feels rejected by O	O feels chosen by S O rejects S
(symbols)	S rejects O S feels chosen by O	O feels rejected by S O chooses S
(symbols)	S chooses O S feels rejected by O	O feels rejected by S O chooses S
(symbols)	S rejects O S feels chosen by O	O feels chosen by S O rejects S
(symbols)	S chooses O S feels rejected by O	O feels rejected by S O rejects S
(symbols)	S rejects O S feels rejected by O	O feels rejected by S O chooses S
(symbols)	S rejects O S feels chosen by O	O feels rejected by S O rejects S
(symbols)	S rejects O S feels rejected by O	O feels chosen by S O rejects S

probably the only theoretical-empirical classificatory system of this kind.

While the purpose of this paper is to present the method, rather than the findings of specific studies in which it was used, it would, however, be difficult to give a clear idea of it without referring to some concrete data. An example of the basic treatment of the data was given with the case of Paul, cited above. Other applications will be illustrated in the following sections.

Behavioral and Reality Determinants of the Perception of Affect

Since the focus of this method is upon adding the *perceptual dimension* of interpersonal relations to the information obtained by standard sociometric procedures, the bulk of the research done to date with this technique has been concerned with problems of perception of affect.

Several questions about the perception of affect can be answered by examining the data collected by means of the present method. By suitable grouping of the diadic categories one can study the determinants of the subject's perceptions of affect. In the present context one may speak of *external* determinants, i.e. actual positive or negative responses received, and of *internal* determinants, i.e. the factors within the subject that contribute to the nature of his perceptual hypotheses. The latter are represented in this method by the subject's own feelings (choice and rejection of Other). Internal and external determinants are, of course, conceived as being, by and large, simultaneously active.

a. Are subjects, generally, well oriented toward reality in the above respect? Yes, individuals have a realistic conception of who chooses them and rejects them. This, of course, is not surprising, since there is more order than chaos in interpersonal relations. (Ref. in preparation.)

b. According to modern theory, however, the perception of others' response should be a function not only of the behavior of the stimulus person, but also of the needs of the subject himself (Bruner, 1951; Bruner and Postman, 1948). In other words, one would postulate that, *other things being equal,* the Subject's perception (guess) of Other's positive or negative feelings toward him would be related to the Subject's *own* feelings toward Other; or, that the strongest hypothesis would be the one with most motivational support. This is indeed true, and probably the major contribution of this method is to have permitted a quantitative and unequivocal demonstration of this fact. The relationship between the subject's own affect and the affect perceived by him is discussed more fully in another paper (Tagiuri, 1951, 1952).

To give the reader an idea of this striking relationship some data will be presented that are related to it. In *all* groups studied it is found that relationships containing *inter*personally incongruent bonds (e.g. S——> >- - - -O; S——> <- - -O; etc.) constitutes about 18 per cent of all relationships present. Relationships with *intra*personally inconsistent bonds (e.g. S——> O; S- - -> >——O; etc.), equally likely in incidence, constitute however, less than 3 per cent of all relationships. This is one manifestation of the strong congruency between affect and perception discussed above. The tolerance for affective and perceptual inconsistency internal to the person is thus seen to be much lower than the tolerance for a similar inconsistency on reality bases, i.e. between the Subject and Other. The fact that perception of affect is simultaneously well based on reality and strongly determined by the Subject's *own* affects suggests the complex feed-back process of interpersonal actions and re-actions leading to the concurrently adept external and internal adjustment. About thirty groups have been studied at the time of this writing and the relationship between perception of affect and affective response has been found to obtain generally, irrespective of the size of the group, the sex and the age of the subjects (youngest group studied: 7 year olds).

There are individuals who are exceptions to the good reality orientation of most subjects: some feel popular and are not, some feel isolated and are popular, some very grossly *mis*perceived affective responses. But there are practically no cases where there is a persistent lack of consistency in affect experienced for Other and affect perceived from Other.

Religious Ethnocentrism and Its Recognition

A study of "recognition" of ethnocentrism between subgroups of adolescent boys in a large preparatory school (Tagiuri, 1951; Goodnow and Tagiuri, 1952), will be summarized to illustrate the use of Relational Analysis in investigations of relationships among subgroups. In this particular case, only choices and guesses were obtained from the 676 subjects, and therefore, the variety of diadic relationships is limited to the first sixteen types on the full list given above. Criswell (1939), among others, has shown that the standard choice-procedure of sociometry can be used to demonstrate cleavages that tend to subdivide groups in terms of some important respect such as sex, color, religion, and so on. Here it was supposed as a matter of course that some religious ingroup preference would appear in the population of the school studied. It was a matter of speculation, however, as to whether the subjects belonging to the different subgroups could

be *aware* of the extent of the ethnocentrism of their own and of the other subgroups. Relational analysis answers this question unequivocally for the population studied, in the following manner.

One could assume, if there were *no* religious ingroup preference at all, that the choices allotted by each subgroup would be distributed among all subgroups in proportion to their size. It was found that such was not the case and that each subgroup preferred to choose from among its own members rather than from other subgroups. The choices *received* by the members of each subgroup constitute their social field. The guesses (of choices received) made by each subgroup would then constitute the subgroup's *perception* of the social field. It was found that the allotment of both choices and guesses among subgroups differed from a proportional distribution, but not from each other. In other words, the perception of the social field was congruent with the social field itself. It was concluded that, in general, members of subgroups directed their guesses *as if* they were aware of the actual subgroup preferences present in the population.

Personality Adjustment and Interpersonal Relations

The relationship between personality adjustment and interpersonal relations was studied on the same group of preparatory school boys (Tagiuri, 1951).

Modern theory of personality holds that personal adjustment is largely a function of "good" development in interpersonal relations (Moreno, 1934; Freud, 1936; Horney, 1945; Sullivan, 1947; Mowrer, 1950; White, 1948). It was thus postulated that well adjusted and maladjusted boys would differ in the adequacy of their social interaction and that such differences should be reflected in the relational analysis data. Two groups of students were selected from the experimental population: the first one consisted of 15 boys who were being seen by the school psychiatrist ("maladjusted") and the second included 20 students ("well-adjusted") who were outstanding in the sense that they seemed to be able to participate effectively in a variety of activities, from academic work to sports and hobbies.

The "well-adjusted" subjects significantly *exceeded* the "maladjusted" ones in terms of:

a. their actual social situation (actual number of choices received is higher for the "well-adjusted").
b. their perceived social situation (average number of guesses). In other words, the "well-adjusted" "saw" more affection in their environment.

c. their "outgoingness" (average number of choices made).

In all the above instances the "well-adjusted" and the "maladjusted" had means respectively above and below those of the "average" boy in the school. It was concluded that the relationship between efficient psychological functioning and successful interpersonal relations held in this instance. Both groups responded to the perceptual part of the procedure (the "guess") *as if* they were aware of their respectively high and low social success.

The "maladjusted" subjects were also studied in terms of their accuracy in perceiving affect directed toward them. For this purpose they were matched, one by one, to "non-maladjusted" students who were comparable in terms of number of guesses made and number of choices received. The "maladjusted" did not differ at all from the subjects with whom they were matched in terms of their skill in recognizing affect.[5]

Evaluation of Relational Analysis

The empirical applications briefly reported above indicate that relational analysis may be usefully and economically applied to a variety of research problems in interpersonal relations. This very comment can, of course, be made with regard to many of the sociometric procedures now in use, and the question arises as to whether Relational Analysis has any new or different features.

The "guessing" technique has been reported at least twice in the literature, though not necessarily under this term. Moreno, in his article on "Sociometry in Action" (1942) mentions a "self-rating" type of sociometric test in which he had an individual (a) list all the persons involved in a certain situation, (b) choose and reject them according to preference, and (c) guess how each person felt towards him. Moreno goes on to suggest that "After he has finished his own self-rating (this individual) may ask another person, familiar with his situation, to rate him independently." This would provide a measure of the agreement between self-ratings and ratings by an observer. "The validity and reliability of data from sociometric self-rating," continues Moreno, "can be determined by giving to a group of individuals an open sociometric test immediately after they have

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[5] This finding should not be placed out of this context since its interpretation is complex and partly related to the fact that the very procedure for matching may have caused the selection of a somewhat unusual group of subjects. This matching procedure was necessary since the accuracy of the "guess" is partly a function of popularity as well as of number of guesses made.

rated themselves." No further information or data or concrete applications of this method have since been given.

R. H. Maucorps (1949) is the other writer who reports having used a guessing procedure, in one of his studies of French Army officers. In his research the guesses were to be made *from among the persons chosen only.* He thus focussed his attention upon awareness of "reciprocations."

It would, then, seem as if relational analysis differed from the two precedents just cited in a number of respects. Theoretically, the choice (rejection) and guess parts of the procedure are strongly integrated in the initial postulate and rationale that both objective and subjective information have to be coordinated to permit some understanding of social behavior. Choice (rejection) and guess are also integrated by the scoring and analysis methods evolved for use with this data: the diadic classification.

This special analytic classification of diads is the feature with respect to which relational analysis departs most widely from the other precedents described. Description and classification of diads has received more and more attention since the turn of the last century, when French writers of abnormal psychology and, in particular, German "formal" sociologists made their contributions on the theory of minimal groups. The problem has, by and large, been approached in two ways; theoretically and clinically. Empirical studies of diadic formations are very scarce, except for the special type of diad constituted by a psychoanalytic therapist-patient relationship. Among the empirical studies available on this problem those done by the sociometrists are relevant to the present work. Northway (1940) and Potashin (1946) developed a number of useful objective classifications of diadic relationships by induction from sociometric procedures. In their studies, "friends," for example, are defined operationally as a pair who give each other first choices on a sociometric procedure. The classification method presented in this paper has of course, the limitations of oversimplification in the sense that a relationship can, in this way, be described in terms of very few variables only and much of the richness of human interaction is lost. It has, however, some distinctive merits. It includes both the objective and subjective elements of a diad, stressed as desirable by recent writers on this topic (Teuber, 1947). The classification is simple and yet permits description of a great variety of relationships that differ psychologically. Furthermore, the inclusion of any relationship into a specific category occurs, so to speak, automatically, in that the very "scoring" of the data produces the classifications. This feature eliminates interpretation by the investigator at this point in the procedure, thus insuring unequivocal data up to the point

of their evaluation. It is, then, the *combination* of the addition of the perceptual component (the guess) of diadic interaction and the special classification, with its use, that makes this method different from previous ones.

While relational analysis has been shown to provide a useful extension of sociometric method, yet the analysis of the data obtained with it present many mathematical problems that are now under scrutiny and in the process of being reported. The complications encountered in some aspects of the quantitative analysis of such data result from the undetermined number of responses (choice, guess, etc.). This is especially serious in very large groups where one cannot assume that each subject has, so to speak, *considered every other* subject. This problem has of course, plagued investigators who used sociometric techniques long ago, and the general solution has been that of determining the number of responses. In the present case, such solution is counter to the very purpose of the method, i.e. that of leaving the subject *free* to respond as he wishes so that the very extensity of his responses becomes important information about him. Without recurring to such drastic constriction of the method, the complications of quantitative analysis have nevertheless been successfully attacked in two ways: (a) by modifying the procedure in ways that do *not* limit it, and (b) by developing especially suited methods of statistical analysis. Both developments will be discussed in a future paper.

It is the impression of the writer that the foci of the method—affect and its perception—added to its high flexibility may concur to include it in the list of useful procedures in social science.

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SCALES APPLIED DYADIC RELATIONSHIPS[1]

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A fruitful area for the wider application of scale models lies in the complex relationships between the individual and the many different objects to which he is oriented, including his attitudes toward a multiplicity of material or cultural objects, as well as the manifold interaction systems through which he relates himself to various social objects. Much action is in this sense directed to multiple objects, and as such demands precise techniques of measurement. Yet, scale techniques of the type developed by Guttman and Lazarsfeld have ordinarily been applied within an action scheme involving a sample of many subjects, multiple questions which define the orientation of these subjects, but only a single or generalized object. Thus increased precision and enhanced richness of interpretation have derived from scales ordering respondents according to the degree of their liking for a certain brand of coffee, to take one example of a scale with a single object; or according to the degree of their prejudice toward Jews, to take an example of a scale in which multiple objects (particular Jews) are generalized into a single category. Less attention has been paid, however, to the possibilities of scaling the complex relationships between multiple subjects and *multiple objects*; that is, in our examples, between respondents and several particular brands of coffee, or between respondents and many particular Jews.

The difficulty in dealing with multiple objects clearly arises from the fact that the individual is now viewed, not in a single relationship, but in many relationships. Even if we consider only his paired relationships to the various objects, eliminating for the present any consideration of multilateral relationships, his orientations are as numerous as the number of objects involved. Thus, if A is an individual, and the various objects are labelled 1, 2, 3 . . . n, A's relationships might be depicted as follows:
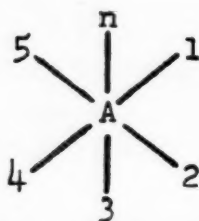
Now, if A were asked only a single question about his relation to each object, such as "Do you like it?", it would be a simple matter to sum up the total complex of his relationships merely by counting the number of objects about which he answers yes, or no. If, on the other hand, we wish to ask as many as ten or more questions about each object and to test for unidimensionality, so as to benefit from the advantages of scalability, we can no longer deal so simply with this complex pattern for A and equally elaborate ones for B, C, D, and all the other respondents. One way to handle this complexity may be diagrammed like this:

$$
\begin{array}{l}
A \longrightarrow 1 \\
A \longrightarrow 2 \\
A \longrightarrow n \\
B \longrightarrow 1 \\
B \longrightarrow 2 \\
B \longrightarrow n \\
\end{array}
$$

etc.

It will be readily seen that this pattern is similar to the more usual one in which a single subject answers a series of questions about a single object. The major difference is that in the present case the same subject appears in a series of different relationships. Indeed, this must be so, because, while an individual can give only one pattern of answers with reference to a single or generalized object (can belong, in other words, in only one scale type), he may give different patterns of answers with reference to each of a series of multiple objects (so that he may belong in one scale type relative to one object and in another scale type relative to another object).

Thus, where multiple objects are involved, one dimension of social action to which scale models may be applied includes, on the one hand, the *pairs* of particular subjects and particular objects under scrutiny, and on the other hand, various items or questions describing the relationships between the subjects and objects of the pairs. If the questions relate to the degree of prejudice expressed by particular subjects toward particular Jews, for

instance, it is logically possible that we might find that all the paired relationships are scalable; that is, following the Guttman model, if *any* subject gives a prejudiced response about *any* object on the hardest question, he also shows prejudice toward the *same* object on all the easier questions; and so on. The units being ordered are no longer the subjects, or respondents, as in most attitude scales. Any particular subject may be ordered in one way in one paired connection, and in another way in another paired connection, i.e., he may be more prejudiced toward one particular Jew than to another. Moreover, the units are not the objects, as in "object scales".[2] In fact, the identity of individual subjects, as well as of individual objects, is set aside in this analysis. It may be returned to later, after scales have been developed, if it is then desired to sum up the complex of paired relationships in which each individual belongs. For present purposes, the focus is exclusively on the subject-object pair.

THE SUBJECT-OBJECT SCHEMA

Let us take a fictitious example of a scale based on paired relationships, and consider some of its conceptual implications. In this example, a sample of respondents (multiple subjects) are asked a series of questions, designed to describe a dimension of admiration or interest, about each of a list of public figures (multiple objects). Operationally, an efficient method of handling such data is to make a punch-card for each subject-object pair; there will be as many cards as the product of the number of respondents times the number of public figures on the list, since each respondent is asked in turn about each public figure. A scale pattern which might result from such data is shown in Figure A. Such a scale serves at the same time to order the questions along the admiration dimension, and to order the pairs according to the degree of admiration expressed by the particular subject for the particular object.

Now, the finding of a scale of this sort has several corollaries in terms of selected dimensions of the same action which are also scalable.[3] If we have X subjects, and *n* objects, and we have already determined that all the paired relationships form a scale, then let us consider first the relations between all the subjects and a particular object, Object 1.

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[2] Cf. Riley, M. W., and Toby, Jackson, "'Subject and Object Scales: A Sociological Application". *American Sociological Review*, June 1952.

[3] Subject, of course, to errors of reproducibility in the pair scale.

The pattern would be like this:

PATTERN OF THE SUBJECT SCALE INVOLVING A SINGLE OBJECT
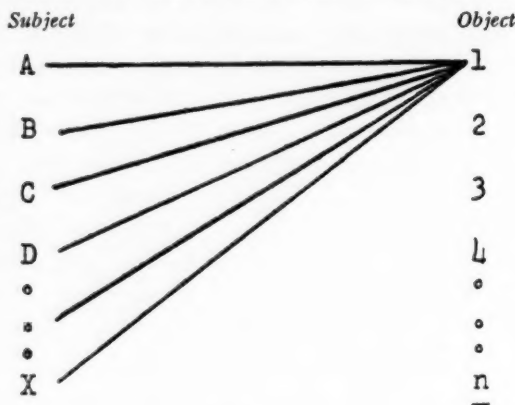
Subject   *Object*

FIGURE A

PAIRED RELATIONSHIP SCALE OF INTEREST IN PUBLIC FIGURES

Subject-Object Pairs						Orientation of Subject to Object
+ = a particular respondent gives a positive answer about a particular public figure						(Questions)

Scale Type of Subject-Object Pairs

5	4	3	2	1	0		
+	+	+	+	+	−	a)	Knows something about
+	+	+	+	−	−	b)	Follows in the news
+	+	+	−	−	−	c)	Talks to friends about
+	+	−	−	−	−	d)	Agrees with
+	−	−	−	−	−	e)	Admires especially

I.e., if respondent A, in answering questions about a particular public figure (e.g., Jackie Robinson), answers positively on two questions, they are questions (a) and (b); if C answers positively about President Truman on four questions, they are questions (a), (b), (c), and (d).

Pairs in scale type 0 are those in which the subject expresses no admiration for the particular public figure; those in scale type 5 indicate a high degree of admiration expressed by the particular subject for the particular public figure.

It should be noted that this is the pattern of the usual scale, in which multiple subjects are ordered in terms of their orientations to a single object; we shall refer to this as the subject scale with a single object. Since all relationships between particular subjects and particular objects have already been found to order the items or questions in the same way, it follows that this

scale relative to Object 1 must order the items in this same way; that is, whenever a respondent says yes to the hardest question about this object, he also says yes to all the easier questions, and so on; and the order of questions from easy to hard is the same as in the pair scale. There will also be a similar scale for Object 2, another for Object 3, and so on, so that there are n subject scales each involving a single object. All of these n scales must order the items in the same way, since the paired relationship scale is, from one point of view, the sum of these n scales.

It will be remembered that the scale of all the paired relationships, while it ordered items, also ordered pairs, *not* subjects; indeed it was understood that the same subject might be differently ordered in the various pairs to which he belonged and hence in the various subject scales. Therefore, it does not necessarily follow that any given subject will be classified in the same scale type in all n subject scales. Such identity among the n scales might, however, be approximated; this would mean that each respondent tended to answer the questions in exactly the same way about all the objects, thus indicating that in fact the objects are perceived by the subjects not as multiple but as identical. In such a case, the same result would probably have been obtained if we had generalized the objects in the original questions, asking about "public figures in general".

Conversely, we may also observe the relations between all the objects and a particular subject, Subject A. The pattern is the analogue of the previous one, since each orientation may be viewed either subjectively, as directed to the object or, as in this case, objectively, as received by the object:

PATTERN OF THE PERSONAL SCALE
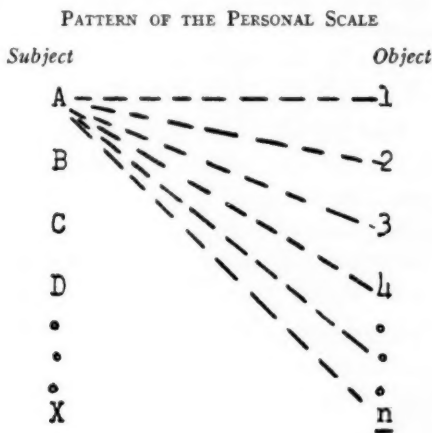
In this pattern, multiple objects are ordered in terms of the degree of admiration which they receive from a single subject. Thus, using the Guttman scaling procedure, whenever an object is rated positively on the hardest question, it is also given a positive rating on all the easier questions by this same subject, and so on. We refer to this as the "personal scale", although it might also be called an object scale with a single subject. As has been pointed out,[4] such a scale measures the intra-personality consistency in the standards which an individual applies to a series of objects. Here too, we may state that since we have a pair scale, there will also be a personal scale for Subject A, another for Subject B, etc.; that all of these personal scales will order the items in the same way; and that the paired relationship scale is, from this point of view, the sum of the X personal scales. Here, too, the specific objects may or may not be differently ordered in the various personal scales; if the same ordering were approximated, this would mean that all respondents tend to give the same answers about each object, so that the findings obtained from a single respondent are not changed or added to by increasing the sample of respondents.

To sum this up, we may say that, given the finding that the paired relationships between particular subjects and particular objects are ordered along a single dimension, then:

1. If we abstract the data relating to any particular object, we will find a subject scale
   Exception: all the subjects may tend to cluster in a single scale type or a few scale types.

2. If we abstract the data relating to any particular object, we will find a personal scale
   Exception: all the objects may tend to cluster in a single scale type or a few scale types.

Beyond this, there are two other scales which may be abstracted from the pair scale data if we wish either to generalize the multiple subjects, that is, to treat them collectively, or to generalize the multiple objects. Thus, in our present example, our aim may be to scale the degree of admiration received by the various public figures from respondents taken as a whole, which could be represented by the object scale with a collective subject; or, on the other hand, we may wish to order respondents according to the

4 Riley and Toby, *op. cit.*

degree of admiration which they express toward public figures taken as a whole, using a subject scale with a collective object. These two scales have been discussed in detail in an earlier paper[5] and are mentioned here merely to indicate that both are derivable from data in which a pair scale exists, although neither depends upon the existence of a pair scale.

Let us first examine the derivation, from our imaginary pair scale, of the subject scale with a generalized object. The first step[6] is to collect, for each subject, the answers which he gives about the list of public figures. Thus, the collected answers for Subject A might appear as follows:

COLLECTED ANSWERS OF A SINGLE SUBJECT

	Questions					Object
	(a)	(b)	(c)	(d)	(e)	
Subject A	+	+	+	+	−	1
	+	−	−	−	−	2
	+	+	−	−	−	3
	+	+	+	+	−	4
					etc.	
Collected for Subject A[7]	+	+	+	+	−	Objects in general

This pattern is merely that of Subject A's personal scale, as discussed above; by collecting it in this way we sum up A's relation to public figures in general, indicating that he expresses more than the required minimum of admiration on all but the hardest question. Similarly, we may collect the answers for B, C, D, etc. Since we already know that there will be personal scales for each subject, and that all these personal scales will in this case order the items in the same way, it should accordingly be clear that the *collected* answers for each subject will also order the questions in this same way thus forming a subject scale with the objects collected.[8] By this means

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[5] Riley and Toby, *op. cit.*

[6] Since, in this case, each paired relationship has been put onto a punch card, the preliminary operation may be simply done on a printing-tabulator.

[7] If the minimum requirement is to give a positive answer about *at least* one public figure on any one question.

[8] It must also be pointed out that a similar subject scale may be derived from other data in which the paired relationships do *not* scale and in which, accordingly, the similar personal scales do *not* exist. Consider, for instance, the following example:

we eliminate our focus on pairs, making it possible to order subjects according to the degree of their admiration; in order to do this, however, we must eliminate the distinctions among specific public figures.

In the same way, it is possible to derive from any pair scale an object scale with a generalized subject. Here the first step is to collect, for each object, the answers received from the various respondents, as follows:

COLLECTED ANSWERS ABOUT A SINGLE OBJECT

Subjects	Questions					Object 1
	(a)	(b)	(c)	(d)	(e)	
A	+	+	+	+	−	
B	+	+	+	−	−	
C	+	+	+	+	+	
D	+	−	−	−	−	
					etc.	
Subjects in general	+	+	+	+	+	Collected for Object 1[9]

This pattern is that of the subject scale for Object 1, as discussed above; by collecting it in this way we sum up the degree of admiration expressed toward Object 1 by the collectivity of respondents, indicating that this particular object receives more than the minimum degree of admiration on all four questions. Similarly, we may collect the answers relative to Objects 2, 3, 4 and so on. We already know that there will be subject scales

Collected Answers of a Single Subject who does *not* order the particular items along a single dimension

	Questions					Object
	(a)	(b)	(c)	(d)	(e)	
Subject A_1	+	+	+	−	−	I
	−	−	−	+	−	II
	−	+	−	+	−	III
	−	−	−	+	−	IV
					etc.	
Collected for Subject A_1	+	+	+	+	−	Objects in general

The collected answers for A_1 are the same, using the same minimum criterion, as they were for Subject A above, despite the fact that A_1 does not follow any particular order of items in his answers about particular objects.

[9] If the minimum requirement is to receive a positive answer from *at least one* respondent on any one question.

for each object, and that all these subject scales will in our example order the items in the same way. Therefore, it should follow that the *collected* answers for each object will also order the questions in this same way to form an object scale.[10] By this operation we make it possible to order the objects according to the degree of admiration accorded them by the group, at the same time eliminating the distinctions among individual subjects.

Scales Applied to Interaction

Within such a framework of subject-object pairs, from which it is possible to derive various kinds of scales, we may distinguish several types of pairs. In the extreme case, the objects may be non-social (e.g., material objects, cultural norms) so that they do not reciprocate the action taken by the subjects. In another case, the objects may be social but regarded always as objects: thus, in our example of the public figures, there was no mutuality of action; public figures were not asked, in their turn, how they felt about our respondents. At the opposite extreme, everybody in a group may be asked about everybody else in the group, so that each is regarded both as subject and as object; here the focus is on the *interactive* relationship.

An individual may be studied in each of his relationships and it is logically possible to find scales for these as for any other paired relationships. Now, however, the data include both the action of one individual and the response of the other. Thus, the interactive relationships of individual A to B, C, D, etc., may now be diagrammed like this:

$$\boxed{A \to B} \ - \ \boxed{B \leftarrow A}$$

$$\boxed{A \to C} \ - \ \boxed{C \leftarrow A}$$

$$\boxed{A \to D} \ - \ \boxed{D \leftarrow A}$$
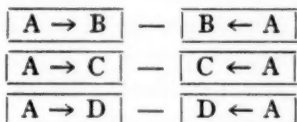
and so on

Similarly, B's pattern will be:

$$\boxed{B \to A} \ - \ \boxed{A \leftarrow B}$$

$$\boxed{B \to C} \ - \ \boxed{C \leftarrow B}$$

$$\boxed{B \to D} \ - \ \boxed{D \leftarrow B}$$
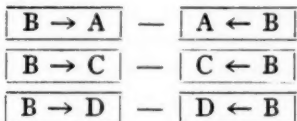
and so on

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[10] It should further be clear that a similar object scale may be derived from other data in which no pair scale exists, that is, in which there is no unidimensionality in the attitudes of particular subjects to particular objects. In such a case, the single dimension appears only in the collected answers of all subjects relative to each particular object, a finding which appears to be explainable only in terms of interaction within the respondent group.

Whether or not it proves empirically possible to find scales of interaction, using data obtained from questionnaires, from observation, or by other methods, it would seem eminently worthwhile to search for scalable dimensions (as of integration, mutual hostility, empathic perception, etc.) in which ego's action calls forth a response from alter which in turn re-inforces ego's original action, and so on.[11] The finding of such scales would indicate a social structuring for the universe under scrutiny of the interaction patterns involved.

AN EMPIRICAL TEST

A test study of dyadic relationships made among 244 high school students in a public school,[12] while too slight to have intrinsic merit, indicates some of the practical problems involved in the effort to scale such data, and further suggests some of the possibilities entailed.

As part of a larger program of research, each student was asked:

Who in the grade do you personally like best?
Who in the grade do you think likes you best?
With whom in the grade would you be most likely to talk over a personal problem that is worrying you?
Who in the grade would be most likely to talk over with you a personal problem that is worrying him?[13]

Enough space was left beside the first two questions so that the student could easily write in three or four names; and enough space beside the last two for him to write in two or three.

The first finding of interest had to do with the very small number of relationships reported: there were only 454 pair combinations out of a possible 15,000[14] which met our minimum criterion of either student naming the other on at least one of the questions.

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[11] Such an attempt would focus upon the individual's interactive system, labelled the "social atom" by the sociometricians (in F. L. Moreno's "Who Shall Survive", Beacon House, 1934), although it would operationally segment the total system in an effort to obtain the benefits of scale technique.

[12] The data were obtained through the cooperation of the Public Schools of Metuchen, New Jersey.

[13] The general form of these questions was suggested by an unpublished Ph.D. thesis by R. Tagiuri, "Relational Analysis: An Extension of Sociometric Method", Harvard University, 1951. Cf. also the test of sociometric self-rating described by J. L. Moreno, "Sociometry in Action", SOCIOMETRY (1942), vol. 5, pp. 298-315.

[14] Each child had the opportunity to name every other child in his grade; actually, girls nearly always named girls, and boys nearly always named boys. Thus, the number of potential relationships is defined as follows:

This was no doubt due in part to the form of the question. At the same time, had we reformulated the question to ask about each student, "Is ——— one of the boys that you personally like best in the grade?" we should still presumably have found relatively few positive answers because of the nature of the relationship under study. We may surmise that, where social relationships are in question, such a finding may be frequent.[15] Thus, we may often in practice fail to simulate the subject-object schema described above, in which it was possible to find a scale of the paired relationships. Or, to put it differently, we may find a scale among those few positive relationships which prove to exist, but the large number of negative or unreported relationships may bulk so large in the 0-scale type that the rest of the scale will look like the small tail of the kite. This not only raises the question of how to adjust ordinary criteria (of reproducibility, etc.) to meet such a situation, but further may make it impractical to attempt to derive from such data the particular subject scales and personal scales which have been described above as theoretically abstractable from a scale based on paired relationships.

Table 1 arranges in a scalogram pattern those relationships which were reported by either ego or alter to exist, omitting entirely the many potential, yet unreported, dyads. This table shows only ego's reports of his relation to alter, ego being one partner to the dyad selected at random as a point of reference. Despite the inadequate number of items, such an arrangement suggests the possible uses of a scale which is based on multiple social objects in which interaction is not taken into account (i.e., in which the social objects are not also viewed as subjects). There are two assumptions underlying this approach:

a) that liking and confiding belong in the same dimension

boys — 10th grade $57 \times 56 = 3,192$
girls — 10th grade $82 \times 81 = 6,642$
boys — 12th grade $46 \times 45 = 2,070$
girls — 12th grade $59 \times 58 = 3,422$

15,326

[15] Even in cases where the respondent stands an even chance of giving a positive answer in relation to fifty different objects, the fatigue induced by asking about all fifty in turn may suggest a question formulation similar to that employed here. We might, for instance, better ask about fifty public figures, "Which ones do you admire especially?", "Which ones do you know something about?". Here again this formulation will probably tend to cut down the number of positive answers given.

TABLE 1

SCALOGRAM PATTERN OF EGO'S RELATION TO ALTER

Scale Type	Scale Pattern				Ego names Alter on Question No.				Ego does *not* name Alter on Question No.				Errors	Total
	1	2	3	4	1	2	3	4	1	2	3	4		
5	+	+	+	+	71	71	71	71	—	—	—	—	0	71
	+	+	−	+	9	9	—	9	—	—	9	—	9	9
	+	+	+	−	7	7	7	—	—	—	—	7	7	7
	+	+	−	−	9	9	—	—	—	—	9	9	18	9
3	−	+	+	+	—	20	20	20	20	—	—	—	0	20
	−	+	−	+	—	8	—	8	8	—	8	—	8	8
	−	+	+	−	—	3	3	—	3	—	—	3	3	3
2	−	−	+	+	—	—	47	47	47	47	—	—	0	47
	−	−	+	−	—	—	22	—	22	22	—	22	22	22
	+	−	+	+	13	—	13	13	—	13	—	—	13	13
	+	−	+	−	4	—	4	—	—	4	—	4	8	4
1	−	−	−	+	—	—	—	63	63	63	63	—	0	63
	+	−	−	+	4	—	—	4	—	4	4	—	4	4
0	−	−	−	−	—	—	—	—	144	144	144	144	0	144
	−	+	−	−	—	16	—	—	16	−	16	16	16	16
	+	−	−	−	14	—	—	—	—	14	14	14	14	14
Total					131	143	187	235	323	311	267	219	122	454

$$\text{Reproducibility} = 1 - \frac{122}{4 \times 454} = 93\%$$

Questions numbered in order of decreasing difficulty

1. Ego predicts alter will confide
2. Ego confides in alter
3. Ego predicts alter likes
4. Ego likes alter

b) that ego's action toward alter and his prediction of alter's response belong in the same dimension.

In connection with the second assumption, it should be noted that the only non-scale box which approaches 5% of the sample of dyads is that (with 22 cases) in which ego predicts that alter will name him as liked best, although he, ego, does not himself like alter.

Table 2 is a breakdown of this same scale arrangement, subdivided according to ego's ability to predict alter's action correctly. We classified

TABLE 2

SCALOGRAM PATTERN OF EGO'S RELATION TO ALTER
RELATED TO EGO'S ABILITY TO PREDICT ALTER'S RESPONSE CORRECTLY

Scale Type	Scale Pattern from Table 1				Ego Predicts Correctly		Ego Predicts Incorrectly	
					Errors	Total	Errors	Total
	1	2	3	4				
4	+	+	+	+	0	56	0	15
	+	+	−	+	5	5	4	4
	+	+	+	−	3	3	4	4
	+	+	−	−	8	4	10	5
3	−	+	+	+	0	16	0	4
	−	+	−	+	6	6	2	2
	−	+	+	−	2	2	1	1
2	−	−	+	+	0	21	0	26
	−	−	+	−	6	6	16	16
	+	−	+	+	8	8	5	5
	+	−	+	−	2	1	6	3
1	−	−	−	+	0	51	0	12
	+	−	−	+	2	2	2	2
0	−	−	−	−	0	27	0	117
	−	+	−	−	11	11	5	5
	+	−	−	−	4	4	10	10
Total					57	223	65	231

$$\text{Reproducibility} \qquad 1 - \frac{57}{4 \times 223} = 94\% \qquad 1 - \frac{65}{4 \times 231} = 93\%$$

the prediction as correct if 1) ego said alter would name him as either liked, or confided in, or both, and if alter did in fact name him or at least one of these counts; or 2) ego did not predict that alter would name him and alter, in fact, did not. This classification might be termed an index of ego's empathic ability.[16] It serves, in the present instance, to suggest the utility of pair scales when the sample of pairs is sub-divided according to the nature of the interaction itself.

If substantial data were developed similar to those in Table 2, one might

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[16] Cf. Leonard S. Cottrell, Jr., "Some Neglected Problems in Social Psychology", *American Sociological Review,* December, 1950. See also J. L. Moreno, "Some Comments on the Trichotomy, Tele-Transference-Empathy", *Group Psychotherapy,* Vol. IV, No. 4, 1952.

interpret them to mean that, if ego's empathic perception of the relationship is high, he does not tend to expect response from alter unless he himself acts toward alter. Sixteen out of the 22 egos who did not like but expected to be liked have now fallen into the low empathic category. Moreover, those who predict correctly are far more apt to belong at the high end of the scale, suggesting that they perceive the relationship as more highly integrated.

A Scale of Interaction

The apparent connection in Table 2 between ego's perception of the relationship and alter's response prompted us, even with these tenuous data, to look for scalability in the interactive relationship. Here we were confronted by the confusing operational problem of dealing simultaneously with both ego and alter. Our universe consists of partners in a series of dyadic relationships. We had decided for each dyad, at random, which partner is to be called ego and which, alter. Thus, provided the sample is large enough, the division between ego and alter simply operates as a random bifurcation of the sample, and the two halves should be approximately alike.[17] Thus, it follows that, just as there are 144 dyads (see Table 1) in which ego does not report any relationship but alter does, there should also be 144 reported only by ego; and so on. That is, when all reported dyads are considered, the marginals on all question answered by ego will be the same as the marginals on all of alter's answers—a situation difficult to handle by Guttman scale criteria.

Table 3 resolves this difficulty by dealing only with those dyads reported by ego. Thus, it concerns ego's action toward alter and alter's response to this action. In this table, there is some evidence that it may be worthwhile to attempt to apply scale models to data of this sort. It seems reasonable to believe that ego is most apt to perceive the relationship as highly integrated if, in fact, his perceptions are reinforced by alter's action. Here, too, the persistence of one large non-scale type suggests possible further study.

The Summation of Dyad Scales

If it proves feasible to scale dyadic relationships, this should help to develop precise measurement of the action process. The focus, however, is on the pair, not on the individual. Particular individuals, as either subjects

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[17] For purposes of later summarizing all the dyads to which each individual respondent belonged, we actually punched *two* cards for each dyad, one treating the individual as ego, the other treating him as alter.

TABLE 3

SCALOGRAM PATTERN OF EGO'S RELATION TO ALTER AND ALTER'S RESPONSE[1]

(Excluding dyads not reported at all by ego)

Scale Type	Scale Pattern					Positive Answer on Question No.					Negative Answer on Question No.					Errors	Total
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
5	+	+	+	+	+	42	42	42	42	42	—	—	—	—	—	0	42
	+	+	−	+	+	3	3	—	3	3	—	—	3	—	—	3	3
	+	+	+	−	+	4	4	4	—	4	—	—	—	4	—	4	4
	+	+	+	+	−	2	2	2	2	—	—	—	—	—	2	2	2
	+	+	−	+	−	1	1	—	1	—	—	—	1	—	1	2	1
	+	+	+	−	−	2	2	2	—	—	—	—	—	2	2	4	2
4	−	+	+	+	+	—	9	9	9	9	9	—	—	—	—	0	9
	−	+	+	−	+	—	1	1	—	1	1	—	—	1	—	1	1
	−	+	+	+	−	—	2	2	2	—	2	—	—	—	2	2	2
3	−	−	+	+	+	—	—	18	18	18	18	18	—	—	—	0	18
	−	−	+	−	+	—	—	5	—	5	5	5	—	5	—	5	5
	−	−	+	+	−	—	—	2	2	—	2	2	—	—	2	2	2
	+	−	+	+	+	3	—	3	3	3	—	3	—	—	—	3	3
2	−	−	−	+	+	—	—	—	50	50	50	50	50	—	—	0	50
	−	−	−	+	−	—	—	—	30	—	30	30	30	—	30	30	30
	−	+	−	+	+	—	3	—	3	3	3	—	3	—	—	3	3
	+	−	−	+	+	1	—	—	1	1	—	1	1	—	—	1	1
	+	−	−	+	−	2	—	—	2	—	—	2	2	—	2	4	2
1	−	−	−	−	+	—	—	—	—	58	58	58	58	58	—	0	58
	−	+	−	−	+	—	1	—	—	1	1	—	1	1	—	1	1
0	−	−	−	−	−	—	—	—	—	—	—	—	—	—	—	—	—
	−	−	+	−	−	—	—	3	—	—	3	3	—	3	3	3	3
Total						60	70	93	168	198	182	172	149	74	44	70	242

$$\text{Reproducibility} = 1 - \frac{70}{5 \times 242} = 94\%$$

Questions numbered in order of decreasing difficulty

1. Alter predicts ego will confide
2. Alter confides in ego
3. Alter likes ego
4. Ego predicts alter will like
5. Ego likes alter

[1] This table is based only on the girls in the sample. Boys were found to cluster in the lower scale types.

or objects, may stand in different scale positions in each of their various relationships, as we have seen. Thus, whenever our analytical concern is with the individual, we must find a means of summarizing the total complex of his relationships.

One way[18] of doing this is to collect all the scaled dyadic relationships to which each individual belongs, and then to classify the overall pattern of these relationships. In order to work out the operational problems involved in such a summarization, we undertook an actual summary with our pilot questions on liking-confiding. Using the scale pattern of answers as shown in Table 1, which refer to a dimension which we may call integration of the relationship, we punched on the card for each dyad:

1. The scale pattern of ego's perception of the relationship.
2. The scale pattern of alter's perception of the same relationship.

We then ordered the cards so as to put together all the dyads belonging to each individual and, using the printing tabulator, we tabulated for each dyad these two scale scores together with other relevant information about both ego and alter. This enabled us to observe the variability in the relationships of a single individual, as well as to make some specific analyses.

Table 4 selects two possible patternings of the dyad summaries, and

TABLE 4

PATTERN OF THE INDIVIDUAL'S RELATIONSHIPS

(broken down by the total number of his relationships)

% of individuals whose relationships include:	Number of dyadic relationships to which the individual is a partner:				
At least one which is perceived by both ego and alter as highly integrated	32%	44%	42%	36%	24%
At least one in which ego has an unfavorable self-image	22%	33%	52%	61%	69%
Number of individuals in each category = 100%	(56)	(48)	(48)	(33)	(42)

relates these to the number of dyads to which the individual is a partner. Thus, within the limits of the present data, the students with a large number of relationships are not necessarily the ones who have at least one relationship perceived by both partners as highly integrated. At the same time, the more dyads the individual belongs to the more apt he appears to be to

TABLE 5

PATTERN OF THE INDIVIDUAL'S RELATIONSHIPS
(broken down by the degree of his peer group strain)

% of individuals whose relationships include:	High degree of peer strain	Low degree of peer strain
At least one which is perceived by both ego and alter as highly integrated	37%	35%
At least one in which ego has an unfavorable self-image	46%	44%
Number of individuals in each category = 100%	(128)	(52)

have an unfavorable self-image in at least one relationship, that is, to like alter but not predict reciprocity from alter.

Table 5 shows how such an analysis might be carried further by relating the summarized scale data to other attributes of the individual. This table relates to an experimental index of peer strain,[19] based on five items (such as being all-around, being friendly, being popular) in which ego reports himself as falling short of peer group standards as he perceives them. Interestingly enough, this particular analysis shows no relationship. Such a finding, if properly substantiated, would challenge our present procedure of equating all of the individual's peer relationships in a summary pattern; it may well be that certain relationships have far more significance for him than others, a significance which must be discovered before any summary analysis can have meaning in terms of his other attributes.[20]

CONCLUSION

This slight empirical example has been presented in the hope that it may call forth a more extensive application of scale technique to the dyadic

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[18] One means of doing this, as mentioned above, is to collect all the objects to which each subject relates, to produce a subject scale with a generalized object; or to collect all the subjects which relate to each object, thus generating an object or group scale. By this means we may succeed in ordering first, the subjects, and then the objects, but we lose the specificity of the dyad scale which is based on *particular* paired relationships.

[19] Cf. the concepts of inadequacy and *strain* as developed by Talcott Parsons in *The Social System,* The Free Press, 1951, particularly Chapter VII.

[20] At the same time, a similar analysis by the individual's status in the peer group seems to suggest that such a summary pattern *may* be related to status.

relationships between multiple subjects and multiple objects. If dyad scales were in fact to be found, this would indicate, outside of biologically determined similarities, a social structuring of such relationships along single dimensions. Moreover, to the extent that interactive relationships may prove scalable, this will help to isolate the elements of complementarity[21] in the reciprocal actions of ego and alter. Such complementarity, to use the terminology of George H. Mead, derives from a situation in which each partner has taken on the attitude of the other partner toward himself.[22] Thus, if scales are found here, this will serve to order along the same dimension elements of ego's own role and his incorporation of the "role of the other".

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[21] Talcott Parsons, *op. cit. passim.*

[22] *Mind, Self, and Society,* The University of Chicago Press, 1934, p. 49 and *passim.*

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DISTANCE AND FRIENDSHIP AS FACTORS IN THE GROSS INTERACTION MATRIX*

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It is not safe to ignore the sheer fact of contiguity as a factor in interaction, despite the fact that many investigators might consider it an uninteresting variable in comparison with personality, friendship, and other such factors. During the course of a study of the social organization of clerical workers, it was discovered that even where the conditions of work do not require cooperative effort the gross interaction rate among the employees was largely determined by distance. Friendship and business necessity were additional factors.

The study was conducted in an office of 29 women and 8 men in a large eastern corporation. Two months were spent observing the group and learning the work of the office. In addition, two and a half months were devoted to interviewing the workers and in continued observation. The last two weeks were spent recording gross interactions.

The investigator sat in one corner of the office where all but four of the workers could be observed. Every 15 minutes he looked about the entire office and recorded in code which persons were engaged in conversation. Because it was sometimes impossible to tell who was talking to whom, each person was marked as interacting with every other person in the conversation group. It was necessary for the investigator to leave his desk to make the observation unless he was already walking about the office. There was no apparent objection to his wandering around a little more often than customary. In fact, only one person mentioned it. Whenever he was engaged in conversation with one of the employees when an observation fell due, the investigator waited until the discussion had ended before making his observation. This meant that the observations were not uniformly spaced at 15 minutes; however, any variation was at random. It was possible to keep observations roughly at four per hour, with no two closer than five minutes apart. Only in a few cases were observations less than ten minutes apart.

It would have been desirable to set up a more sophisticated observation

program whereby detailed data on each interaction could have been obtained. This was not possible, however, under the conditions in which the study was conducted. The system of observation which was adopted was apparently not disturbing to the workers, so that it may be assumed they continued talking with each other in a normal fashion, neither increasing nor decreasing the frequency of their conversations to make an impression on the observer.

The situation was ideal for observing the effects of distance on interaction, especially among a group of twelve girls who worked in one section of the office. Conversation between the girls did not necessarily occur on business matters. Each performed a self-contained clerical task, and the jobs of all the girls were similar. The work did not require cooperation, but occasionally one girl would help another with her task. Many of the conversations among the girls were overheard by the investigator, and a large majority of them concerned personal rather than business matters. The girls in this group formerly worked in two separate offices. They were brought together as a single work group about a year and a half before the study began. This meant, of course, that some firm friendships had formed among girls in each of the two separate offices before the merger. The influence of interaction as a factor in friendship will be suggested if friendships form between the girls formerly in different offices who now interact most frequently with each other. The age and length of service of each of these girls is given below, with those formerly in Office "A" on the left and those formerly in Office "B" on the right. Those who joined the group after the merger are centered beneath the other two.

TABLE I

Office "A"	Age	Company Service		Office "B"	Age	Company Service	
		Years	Mos.			Years	Mos.
Baldwin	22	4	– 7	Casey	30	10	
Carey	22	1	– 9	Hall	27	3	– 2
Doherty	21	2	– 6	O'Malley	21	4	– 4
Donovan	19	2	– 8	Rafferty	25	8	– 3
Lenihan	26	7	– 3	Rioux	23	1	– 10

		Entered Office After Merger				
			Age	Company Service		
				Years	Mos.	
	Fahey		34	3	– 5	
	Murray		19	1	– 6	

The group was seated in one corner of the room in three rows of four girls each, with each row separated from the others by file cabinets. The girls could look over the files to speak with those on the other side, but not with as great ease as they could talk to those within their own rows. It is in connection with the seating arrangement that the gross interaction matrix makes most sense. It is given at this point so the two can be readily compared. If the matrix is arranged by rows the relationships stand out most clearly.

TABLE II

INTERACTION MATRIX*

		Row I				Row II				Row III			
		Baldwin	Fahey	Rioux	Murray	Doherty	Rafferty	Hall	Donovan	Casey	Carey	O'Malley	Lenihan
Row I	Baldwin	—	53	23	8	0	5	2	2	0	1	1	16
	Fahey	53	—	26	9	0	2	3	0	2	1	0	1
	Rioux	23	26	—	75	1	4	1	2	2	1	0	0
	Murray	8	9	75	—	0	2	1	3	1	1	1	1
Row II	Doherty	0	0	1	0	—	24	26	18	4	8	7	2
	Rafferty	5	2	4	2	24	—	6	30	20	19	21	3
	Hall	2	3	1	1	26	6	—	51	7	5	3	2
	Donovan	2	0	2	3	18	30	51	—	3	7	1	1
Row III	Casey	0	2	2	1	4	20	7	3	—	46	42	20
	Carey	1	1	1	1	8	19	5	7	46	—	69	30
	O'Malley	1	0	0	1	7	21	3	1	42	69	—	53
	Lenihan	16	1	0	1	2	3	2	1	20	30	53	—
	Total	111	97	135	102	90	136	107	118	147	188	198	129

Grand Total: 1558

Row Totals:	Frequency	Percentage of Grand Total in Each Row	Within-Row Total	Percentage of Within-Row Interaction in Each Row Total
Row I	445	28.56	388	75.95
Row II	451	28.95	310	68.74
Row III	662	42.49	520	78.55

* All names used in this matrix and throughout the paper are fictitious.

It will be noted that with five exceptions, all numbers within the blocked-off sections, which indicate within-row interactions, are larger than

those outside these sections. These five scores occur between Lenihan and
Baldwin, Hall and Casey, Rafferty and Casey, Rafferty and Carey, and
Rafferty and O'Malley. But before going into the individual scores more
thoroughly, the interaction between rows deserves attention. If chance alone
operated in determining the frequency of interaction between girls, each one
should interact approximately the same number of times with each of the
others. As is evident from the matrix, this is not the case. Considering
the interactions of each girl with only those in her own row as opposed to
interactions outside the row, and then the total figures for each row, the
following results are obtained:

TABLE III

INTERACTION BY ROWS

	Inside Row	Outside Row			Total
		1-Row Distant	2 Rows Distant	Total	
Row I	388	28	29	57	445
Row II	310	28(I)	113(III)	141	451
Row III	520	113	29	142	662
Total	1218	141	58	340	1558

In the totals above, of 1558 interactions, 78.18 per cent took place
within the row in which the girl sat. The girls interacted with those out-
side their rows 21.82 per cent of the time. Distance is obviously the gross
determinant of rate of interaction as shown in these figures.

One other condition should hold if proximity is the main factor influ-
encing rate of interaction in this situation: Interaction should occur more
often between the adjacent rows than between the two end rows. The data
are found in the Outside-Row interactions in Table III. Row I's interactions
(28 with the adjacent row and 29 with that two rows distant) are contrary
to expectations. In Row III and in the total outside-row interactions, it is
clear that interaction is much greater between girls in adjacent rows than
between those two rows distant from each other.

The total data and those for Row III confirm the anticipated results.
Those for Row I reflect the influence of a close friendship between a girl
in Row I and one in Row III (Lenihan and Baldwin). Their total inter-
actions of 16 show up in the outside interactions of 57 for that row and
load the results. In the larger outside interaction of 142 by Row III this
one relationship does not hide the effect of distance even though the same
16 interactions enter into its total. If only the total figures or those for

Row III had been available, they would have masked friendship as a factor in the Row I results.

How much distance influences the rate of interaction is even more striking when the contacts of individual with individual are considered, ranking those for each person with all the others by frequency. For Row III, as an example, the following results are found, with F indicating frequency of interaction and R the row in which the interactant sits.

TABLE IV

INDIVIDUAL INTERACTION RATES FOR ROW III GIRLS

Casey:			Carey:			O'Malley:			Lenihan:		
F	Person	Row	F	Person	Row	F	Person	Row	F	Person	Row
46	Carey	III	69	O'Malley	III	69	Carey	III	53	O'Malley	III
42	O'Malley	III	46	Casey	III	53	Lenihan	III	30	Carey	III
20	Lenihan	III	30	Lenihan	III	42	Casey	III	20	Casey	III
20	Rafferty	II	19	Rafferty	II	21	Rafferty	II	16	Baldwin	I
7	Hall	II	8	Doherty	II	7	Doherty	II	3	Rafferty	II
4	Doherty	II	7	Donovan	II	3	Hall	II	2	Hall	II
3	Donovan	II	5	Hall	II	1	Donovan	II	2	Doherty	II
2	Rioux	I	1	Rioux	I	1	Murray	I	1	Donovan	II
2	Fahey	I	1	Murray	I	1	Baldwin	I	1	Murray	I
1	Murray	I	1	Baldwin	I	0	Rioux	I	1	Fahey	I
0	Baldwin	I	1	Fahey	I	0	Fahey	I	0	Rioux	I

It will be noted that not one of the persons had more interactions with anyone outside her row than with the least frequent of the row members. In one case there was a tie, that of Rafferty receiving as many contacts with Casey (20) as Lenihan did. Casey sat at the outside end of her row, Lenihan at the other end. In this case friendship also entered in. Casey and Rafferty were key members of the nucleus of one clique of girls; Lenihan was not a member of this clique. Casey had also mentioned in her interview that Rafferty was her best friend in the office, and Rafferty mentioned Casey as her best friend. In every case except one, that of Lenihan's 16 contacts with Baldwin, there is a constant decrease of frequency of interaction as distance increases by rows. Most frequent interaction occurs within the row; second most frequent, between adjacent rows; least frequent, between the two end rows.

If each of the 12 girls' interactions with all the others is arranged as in the preceding table by frequency of interaction, there are 12 sets of 11 diadic interaction frequencies, or a total of 132 relationships. It may be assumed that if distance is the determinant, then in each case interactions

with each girl within the row will be highest; those with the adjacent row, second highest; and those with girls two rows distant, lowest. There were only nine relationships which did not conform to this expectation.

In addition it is found that if relationships within each row are considered alone, then in only one case does any girl interact more with a girl two or three desks away than with those sitting next to her. If the distances are considered for the entire row, with the end girls talking most with those adjacent to them, next most with the girl two desks away, and least frequently with the girl three desks away, only one additional exception results.

SUMMARY

(1) Interaction within the row is far greater than is interaction of each row with the other two.
(2) Interaction is more frequent between adjacent rows than between those separated by another row.
(3) Within each row, the girls interact more frequently with those seated nearest them than with any others.
(4) With few exceptions, the frequency of interaction diminishes as the distance within the row increases and also as the distance by row increases.

Discrepancies in the distance data are understandable in terms of friendship choices. A discussion of friendship preference data will aid in clarification of these aberrations.

ANALYSIS OF FRIENDSHIP CHOICES

The friendship choices were secured during the interviews which were held with each worker. The interviews were intensive and lasted a minimum of one hour. They were for the most part nondirective, but one question that was always asked was, "Who are your best friends around here?" In almost every case the question was introduced when the employee was discussing the friendliness of the office staff in general. No limit was set on the number of friends who could be mentioned, but most of the women in the office did not name more than three. Two of the 12 girls in the group that has been discussed chose none of the girls in their work group; one chose five within the group. A matrix of friendship choices for the office gives the following, with those for the girls being discussed blocked off by double lines.

There is a cluster of mutual choices involving O'Malley, Casey, Rafferty, and Hall (Table V). Carey chose each of these and was chosen by one of them. Rioux was selected by two, but chose no girl in the group. Murray,

TABLE V

CHART OF FRIENDSHIP PREFERENCES
(FEMALES)

PERSON	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	TOTAL GIVEN
1.		1	1																											2
2.	1		1																											2
3.	1	1		1																										2
4.	1	1	1																											3
5.																														0
6.							1	1	1	1	1																			5
7.								1	1							1														2
9. O'MALLEY							1	1		1	1	1	1	1														1		4
10. CASEY								1	1	1	1	1	1	1														1		7
11. RAFFERTY									1	1	1		1																	3
12. HALL							1		1	1	1	1																		0
13. CAREY							1				1																			1
15. DOHERTY								1				1	1																	3
16. DONOVAN	1		1	1													1													2
17. LENIHAN																	1													5
19. FAHEY	1																1	1												1
20. MURRAY								1																						2
21.																			1	1	1	1	1	1					5
23.																			1	1	1	1	1	1					5
24.																			1	1	1	1	1						5
25.																			1	1	1								4
26.																								1	1				1
27.																							1	1	1				2
28.								1																						3
TOTAL RECEIVED	7	4	5	2	0	0	3	5	5	5	6	6	3	4	0	2	1	2	0	4	5	5	5	5	3	3	3	0		98

who appears to be unchosen if viewed only within this work group, becomes a well integrated member of a clique when her mutual preference choices with the younger girls are revealed, as in the lower right corner of the chart above. The relationships within the group stand out most clearly if shown in diagrammatic form (after a sociogram).

FRIENDSHIP PREFERENCE DIAGRAM

CRITERION: WHO ARE YOUR BEST FRIENDS AROUND HERE?
Numbers refer to persons on the Chart of Friendship
Preferences (Table V).
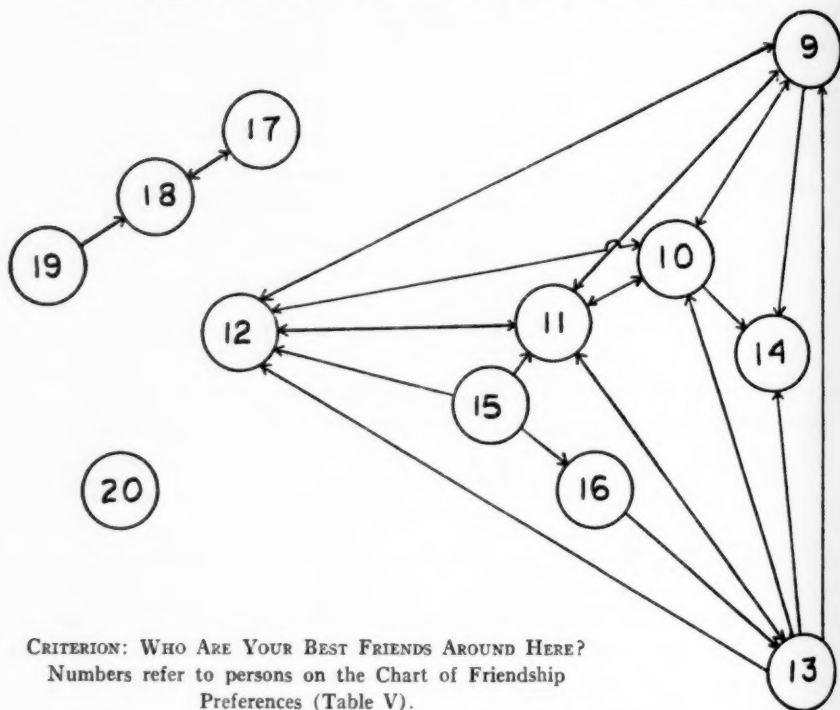
On the basis of the friendship choices it would be predicted that when proximity was not the main determinant of interaction rate, the mutual choices indicated in the diagram would exert the strongest pressure for frequency of interaction. Considering the data already presented, it is found that in Table IV Baldwin, who should have come at the end of the group listed under Lenihan, actually had a higher frequency of interaction with her than did anyone else outside her own row. They were mutual friendship choices, and neither chose any other girl within the work group. Reference to the Interaction Matrix (Table II) will show that five cases were found

in which interaction outside the row was larger than the lowest within-row frequency. All of these cases—Lenihan and Baldwin, Hall and Casey, Rafferty and Casey, Rafferty and Carey, and Rafferty and O'Malley—were also mutual friendship choices. Friendship here suggests an explanation for the discrepancies when distance is considered as the gross factor in the interaction rate.

One surprising discovery is the low interaction rate between Rafferty and Hall, who sat next to each other and who were mutual friendship choices. To explain this it is necessary to look at information secured in the interview with Rafferty. She remarked of her neighbors, "I'll still just sit at my desk some days and not say a word to either [Alice Hall] or [Elizabeth Doherty]. Actually neither one of them has anything to talk about. They're both nice, but . . ." And again, "But some of the girls will make dirty cracks intended to hurt you. Most of the time their remarks are humorous, but sometimes they aim to hurt. I guess I do the same thing myself. I called [Alice Hall] 'fatso' the other day, and I've made other digs at her. But they usually start when she makes me mad by insulting someone else." Several others complained of Hall's barbed tongue, so this may help explain her low interaction rate within her friendship circle. It also suggests varying meanings for the word *friendship*.

It is to be expected that interactions outside a girl's own row will be highest with those who represent mutual friendship choices, as shown in the diagram. There are twelve such relationships outside the girl's own row. Of these, ten represent the highest outside interactions, two do not. Both of those which are lower than the rate with other individuals outside the row are with Hall, and the personal peculiarities influencing the frequency of her friends' interaction with her have already been mentioned.

One interesting pair is Murray and Rioux. Neither chose as a friend any of the girls in this work group. The two sat next to each other. They had the highest frequency of interaction (75) of any pair in the group. It is possible that this high frequency is partly explained by the fact that neither left her seat frequently to talk with friends outside her row.

Friendship has been shown to be of some importance in determining the frequency of interaction, but distance appears to be the most important factor among the girls being discussed. Further evidence is found in the fact that in every case the two persons with whom each girl interacted most frequently were in her row. For only one girl was one of these two a mutual friendship choice; and she was second, not first, in frequency of interaction with the girl concerned. No person who ranked top in frequency of inter-

action with any girl was a mutual friendship choice. However, if one-way friendship preferences are considered, the picture is more encouraging to a belief that friendship counts highly. If the two persons who interacted most frequently with each girl are considered, it gives a total of 24. Of these, 11 were also friends by at least a one-way choice.

There is some support in the data for the hypothesis that persons who interact frequently will tend to develop sentiments of friendship, other things being equal. Three clear-cut cases tend to substantiate this hypothesis. One of the eleven one-way friendship choices which were among the top pair in frequency of interaction was that of Fahey for Baldwin. Fahey sits next to Baldwin, and the two were observed to interact 53 times. Fahey was new to the office and did not have close friends, so Baldwin was one of her two choices. Her other choice was a woman who had sat within speaking distance until two months before the observation period, and with whom Fahey had her third highest interaction rate of 23 even while she sat some distance away. During the earlier period, the rate would doubtless have been much higher.

The second case is Doherty. She was shy, and she had no close friends in the office group. She selected as her best office friends those in her work row, with whom she interacted more frequently than with anyone else in the office. It was suggested previously that friendships which formed between girls who were in different offices before the merger would be between those who interacted most frequently. The case of Doherty conforms with this expectation. Two of her three friendship choices were with girls formerly in office "B," while she was in office "A." These were the two girls with whom she had her most frequent interaction.

Carey was previously in office "A." She chose both O'Malley and Casey from the office "B" group as friends, and her highest interaction rate was with these two girls. She had a high rate of interaction with Rafferty, who sat outside her row, and she and Rafferty were mutual friendship choices. Rafferty was formerly in office "B."

The Office Context in Which the Group of Twelve Worked

The other women in the office were divided into two groups: (1) the younger girls, all nineteen years of age or younger and, with one exception, having six months service or less; and (2) the senior women, who were from 33 to 54 years of age and who had from 14 to 26 years of service.

The younger group supports the hypothesis that those who interact frequently tend to develop sentiments of friendship. They came into the office without previous acquaintance with the girls with whom they worked.

They interacted most frequently with each other. They soon formed their own clique and occasionally went out as a group after business hours. With one exception, each one of these girls chose all of the others as friends.

Among the senior women business and proximity result in the greatest frequency of interaction. In no case does one of this group interact as frequently with those who represent mutual friendship choices as she does with her neighbors or with those with whom she has to discuss business matters. With one exception, they all interact more frequently with both of the two latter groups than with mutual friendship choices. One of the women, Boyle, had her highest number of interactions (23) with Fahey, who chose her as friend. Most of these interactions were initiated by Fahey's leaving her desk and going to Boyle's. As Fahey mentioned that she frequently consulted Boyle on business, it cannot be assumed that all of these interactions came about solely because of her liking Boyle. It does appear, however, that the frequent interaction led to her choosing Boyle as a friend.

The men in the office have not been discussed, but it was found that among them business matters were the most important influence on the rate of interaction, except for one man who talked excessively because of what was assumed to be a feeling of personal insecurity.

Interaction rates differed among the various groups of women as shown in the following table. The young girls had the least service. The intermediate group, which has been discussed at length, was between the other two in both average age and seniority. The senior women had the highest average age and the longest service in the company.

TABLE VI

INTERACTION BY SENIORITY GROUPS

	Inside			Outside			Range for Inside Interaction		
	Mean	High	Low	Mean	High	Low	Mean	High	Low
Young girls	112.17	144	93	2.00	3	1	16.17	21	11
Intermediate	148.12	240	71	4.69	18	0	21.94	27	16
Senior women	93.00	121	61	4.43	7	1	19.14	24	14

The high rate of inside interaction, that is, interaction with other persons working in the office, for the intermediate workers probably indicates that they do not feel particularly insecure in their positions. There are many suggested explanations, such as the belief by many of these girls that they will soon be married; or the possibility that they have passed the stage experienced by a new worker when she doubts her abilities, and they

have not yet reached the stage when they feel their entire career is tied up with the one company which employs them. Range in the table above refers to the number of persons interacted with during the observation period. In this too the intermediate group was highest. It will be noted that the senior women were lowest in frequency of interaction, while the younger girls were lowest in the range of interaction.

In a lengthier friendship analysis not reported in this paper, clear-cut distinctions turned up between the three major work groups of women which have been indicated above. The younger group formed the most tightly knit clique in the office. The intermediate girls had a clique of some strength with a nucleus of four girls and several who were marginal members. The senior women had no clique under the rigorous definition which was used, requiring that a clique be composed of three or more persons each of whom chose all of the others. By liberalizing this slightly they did have a clique of four with a few others tied in to some degree. It appears that the younger workers are the most friendly and the least selective in their friendships. The women who have worked longer for the company are likely to be more discriminating in choosing their friends.

Summary and Conclusions

It is evident in the above analysis that distance was the most important factor in determining the rate of interaction between any two employees in the group studied. This influence held up consistently throughout all of the relationships explored. When distance alone did not serve as an index of interaction it was found that friendship was likely to be the controlling influence. Other factors included the necessity for discussing business matters and such personality factors as feelings of insecurity.

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SELECTIVE CHOICES AND PROPINQUITY

(Excerpt from a Survey)

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Our survey deals with the two final classes of a large educational institution. All students are boarders, their average age is about 20. They are all preparing the competitive entrance examination of a top-ranking military academy. They live under typical French boarding school conditions: one large, single school building, complete with classrooms, dormitories, dining-rooms, playgrounds and sport grounds, chapel. On the surface, the students appear to be in constant contact with one another, but in fact schedules, (classes sports and premilitary training) separation of dormitories, all concur to establish a cleavage among the students on a classroom basis. The latter is reinforced by certain traditions proper to each of the classes, within the frame of the collective traditions of the "old" school.

Our purpose was to examine in particular the *genesis*, the *motivations* and the *nature of the sympathies* existing in two parallel classes. However, we started by situating this study within the overall context of the said institution, that is within the framework of the rules, patterns, collective forms of sociability relating to a specific sociological study.[1]

A first survey was completed in November, three weeks after the beginning of the school year. A second will be achieved in April. It will deal with the development of the collective environment, interpersonal structures and selections.

This paper will deal with the first survey: the manner in which it was conducted and the results obtained.

After being given—if we may use G. Palmade's fortunate terms—a kind of affective and functional "X-ray" of the two classes studied, through the use of sociometrical tests, we tried to discover under what conditions— if not for what reasons—the initial associations took place. We had several available sources of information.

a) An *individual questionnaire* giving information about family, social,

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[1] The results of the complete survey will probably be published in a next volume of the "Cahiers Internationaux de Sociologie".

economic and educational background of each subject, as well as information about his tastes, aptitudes, achievements, favorite entertainments, confirmed by information provided by administrative and pedagogical sources and counter-interviews.

b) A *questionnaire on affinities*, with the object of getting to know how the subject chose and what were his daily life relations with friends or close classmates.

c) A very precise *plan* of the classroom, recording the order of successive arrivals, whether individual or collective.

d) A series of *interviews*, only slightly directive, on how each student came to occupy his seat in the classroom.

It was soon established that the only headings of the questionnaire disclosing a really significant cleavage were those dealing with the *common educational background* of most of those who associated in pairs.

1—Seventy-five percent of reciprocal choices (pairs or triangles) follow a cleavage based on "older ones" (those who were repeating the class) and "bizuths" (those who had entered the class in October).

All the "older ones" (except one) were linked by a reciprocal choice in each class.

2—Among the sole "bizuths," 70% of reciprocal choices are made on the basis of a cleavage age relating to a prior school background. This being considered, three *"pregroups"* may be distinguished:

a) students coming from lower classes of the school
b) students coming from a related military school
c) students coming from various civilian schools, called "pékins"

The latter, very heterogeneous, constituting a nominal rather than functional pregroup since his members were not acquainted with each other before.

It should be noted that all the "older ones" are, according to tradition, grouped on the last row of the classroom and are in a position to demonstrate because of this physically biased location, a feeling of solidarity within their own ranks, a measure of control over the "bizuths" placed in front of them, and of "distance" toward their teachers.

This data, however, only provides an initial selective framework (transgressed in approximately 25% of the cases) and we were relying on the questionnaire about affinities to throw a light first on the interplay of preferences within this preliminary framework, and second on the interplay of selective choices exterior to the framework. This questionnaire proved

rapidly that it was unable to provide the decisive key in the present study. Indeed, many students stated in the interviews that they did not know each other yet, and that despite appearances, their opportunities for getting in touch with each other were uneven. They were acquainted in the main with "their neighbors."

These observations caused us to study very closely the plan of the classroom and to compare it with the results of the sociometrical tests:

1) *Test of "field of sympathies,"* corresponding approximately to the "emotional expansiveness," and asking the students to distinguish between:

    a)   the sympathies which appear to be shared and

    b)   the sympathies aimed at.

2) *Preferential tests,* limited to 3 emissions.

At the same time, we submitted each "bizuth" to an interview to understand the precise conditions under which he came to occupy his seat in the classroom and the affective and operative relations he had with his various companions.

We wanted to determine whether the subjects had taken their seats side by side because they had previously met or whether they had "liked" each other right away, a natural phenomenon that is thought to exist everywhere.

But if it is true that in the main, the seats occupied by the "bizuths" had been determined according to the hour and day of the arrival of the students in the school, and that reciprocal choices were predominant among neighbors, the order of factors should be reversed: very often people did not get closer to one another because they had a liking for each other, *but they are inclined to have a liking for each other because they are close to each other,* that they have to live and solve together a number of practical and intellectual undertakings. Trite as this statement may be it is not less unlikely, after all, than the hypothesis of spontaneous attraction. It remains to be determined which of the former assumptions is confirmed by the facts and the various situations.

A close examination of the plan of the classrooms—where the subjects spend 11 hours each day, compared to the chart of mutual selections among the "bizuths" only goes to show precisely that:

1—the "propinquity" factor is very significantly linked with the choice of likings;

2—that it even operates among two subjects coming from very different schools, whereas each of them has within the class some companions from their own school—in other words this factor can overcome factors of the pregroups pure propinquity;

ANALYTICAL TABLE OF RECIPROCAL CHOICES AMONG "BIZUTHS"

	Class I	Class II	Sum	Per cent
Total of reciprocal choices	5	12	17	100%
Reciprocal choices within the pre-groups ("pekins" included)	4	8	12	70%
Reciprocal choices from *propinquity proper* (individuals from different pregroups)	1	3	4	24% ⎫
Reciprocal mixed choices wherein propinquity is dominant (nominal pregroup of pekins unacquainted before)	2	4	6	35% ⎬ 59%
Reciprocal choices among individuals of the same pregroup sitting apart	0	2	2	12%
Reciprocal choices among individuals of different pregroup sitting apart (affinity proper)	0	1	1	6%

So it appears that in about 60% of the pairs, propinquity proves a dominant factor.

3) As the notion of "propinquity" is broadened, we have established a chart based on "fields of sympathies" expressed by the subjects.

	Class I	Class II
Choices emitted by the 10 closest subjects	72%	87%
Choices emitted by the 20 most distant subjects	28%	13%
Choices received from the 10 closest subjects	75%	96%
Choices received from the 20 most distant subjects	25%	4%

Of course we would have liked here to proceed to an analysis of variance, but it should be made plain that our source of the variance "distance" was not pure. Other factors—in addition with the cleavages of pregroups—have intervened: particularly the one based on the prestige of the leaders and of the "older ones" (which is strong among the bizuths). It is possible to evaluate this selection based on prestige—consequently notwithstanding social and spatial distance—by examining in particular the answers given in the test "sympathies aimed at."[1]

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[1] The test is worded in the following: "Name in a decreasing order of preferences the classmates whose sympathy you wish to gain."

Class I (8 older ones): 17 choices (among 1st and 2nd rows) out of 25 expressed, aim at older ones.

Probability in occurrence of observed phenomena:
less than 1/100,000

Class II (7 older ones): 13 choices (among 1st and 2nd rows) out of 21 expressed, aim at older ones.

4) A striking characteristic stood out: nearly all the *isolated subjects* (3 out of 3 in Class I; 5 out of 6 in Class II) were in a corner or on the fringe of the row; they only had one immediate neighbor (which generally speaking had not been chosen). This phenomenon is due to intercausality. Because to place oneself in a corner or on the fringe of a row when a choice is possible, indicates a concern with distance and the distance is in turn reinforced because of the seat chosen. This leads us to say that these solitary subjects are on the fringe because they are solitary and that they remain solitary particularly because of the location of their seats.

In last analysis, we do not claim that the propinquity factor can ever in itself explain selective sympathies. Certain affinities remain strictly intersubjective and are interwoven, if not all neighbors would reciprocally choose each other! In addition there exist a minority of reciprocal and distant choices (either among students with the same school "status" or among "bizuths" and "older ones") which cannot be credited to social or spatial factors. But the importance of the latter must be a warning against a kind of romanticism concerning the approach to the phenomenon of affinity in which we were inclined to indulge in before the survey was made.

This disproves the notion that even in a restricted group, leading the same life in common, each one has equal opportunities to sympathize with whomsoever he chooses according to the spontaneous interplay of interpsychological "teles". Even in such groups there exist *spatial and sociooperative "areas"*, which condition to a great extent—at least for an initial period—affective choices and even functional evaluations. This phenomenon is reinforced in daily life because of the propinquity of home, of route, of work, all of which tend to impose cleavages.

When students were interviewed, they frequently made the remark, expressed with a slightly fatalistic undertone, that "we live together but we seldom have the opportunity to get well acquainted with each other"; the custom of working or discussing something in the same corner of the classroom "restricts intercourse". Some even add: "It is a pity, we sometimes feel as though we were missing something."

But let us not forget that this study is situated at the initial stage;

the April survey will teach us whether specifically elective attractions will have altered the first structures, overcome the pregroup and proximity "conserves" often due to chance, or whether these will have become crystallized and whether time and space will have acted in coalition.

In order to evaluate this development, we shall not only conduct, a series of sociometrical retests but also some sociodramas. The latter will be conducted according to the "warming up process" and will give an opportunity for releasing individual or collective spontaneity that is likely to be dimmed by a life of work and monotony.[2]

Note.—Research now being undertaken under the auspices of the laboratory:

1) *Meeting tests* "In search of sympathy": opening of a debate (non-directive technique) on the theme of "The congenial man", followed by a psycho-drama ("warming up" technique of Dr. Moreno).
   a) Between four subjects belonging to the same social category;
   b) Between three subjects belonging to different social categories. Recording with magnetophone system. Survey organized by J. Maisonneuve, and G. Palmade, technical expert.

2) Surveys on compared sociometrical status of children within fraternal group and within school environment (research led by Mlle. Cahn).

3) Research on the "social frame of spatial perception" and of "perception among individuals" to be supervised by Prof. G. Gurvitch.

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[2] We feel bound to report that for the last four months (with one exception involved an isolated student) no student has changed seat in the class, although it was quite possible to do so. By contrast the ceremony of the "reversal" which takes place in December and which marks the end of the ragging on "bizuths," has certainly altered relations between the "older ones" and the "bizuths"; finally the latest interviews have already disclosed certain selective permutations.

DIRECT OBSERVATION AS A SOURCE OF QUASI-SOCIOMETRIC INFORMATION*

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This is a description of how direct observation of seating arrangements and interaction during monthly union meetings proved useful as a crude but valuable instrument of research. This note does not pretend to discuss types of leadership as derived from sociometric techniques.

In many research situations, it is difficult, if not impossible, to use questionnaires. For instance, if a study of trends is important, the observer would like to administer a long series of questionnaires, perhaps far more than the members will tolerate. In some organizations, a small core may attend every meeting, but large numbers of the membership appear for only single sessions. In such circumstances, the core may be willing to answer questions, but it is difficult to establish rapport with the rest.

One way to get around this is through direct observation. *The researcher may operate as though a series of sociometric questions had been asked of the membership and the membership present at a given meeting is in process of answering them.* Thus one may observe the members acting out the answers to questions such as these: with which persons would you go to a union meeting? With which persons would you talk before a union meeting? With which persons would you sit at a union meeting? With which persons would you go out to drink beer after a union meeting?

This approach was first applied by the writer to a newly organized union local of 1500 members. Twelve out of the first fifteen membership meetings were observed. The average attendance was one hundred. Naturally the material gathered was supplemented by attendance at department and committee meetings and intensive interviewing of the officers and rank and file.

The technique was extremely simple. As soon as the meeting had started

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and the members had settled, the observer drew a "map" of where they sat, an "observer" sociogram. Since the meeting hall was rarely more than one-third full, the members tended to sit in clusters. For the most part, each cluster contained men from the same occupational group, although groups with common interests sat near one another. Interspersed between these were a small number of "isolates" or "isolate units" sitting by themselves or in twos or threes.

Of course, there are a number of limitations to this type of research. The observer frequently does not know many of the members' names. By the end of fifteen meetings, in the case reported here, the observer was acquainted with about half of those who regularly attended by name and the rest by occupation. Naturally, the failure to know more people by name made observation more difficult. Furthermore, it seemed that too obvious note taking evoked the suspicion of some of the members. This meant that much of the data had to be committed to memory and surreptitiously jotted down during the meeting or immediately afterward. Where known, individuals' names were written down on the maps. Otherwise, notes were made of the occupations of the various clusters.

The most striking thing shown by these maps of seating arrangements was their stability. Members developed a strong habit of sitting in the same part of the hall from one meeting to the next. Although charts drawn six months apart were considerably different, little change could be observed from one month to another. Significantly, these changes in sitting location were correlated with more profound changes in the political life of the local.

Seating arrangements mirrored party alignments. During the first three or four months of the local's history, confusion prevailed. Gradually an orderly pattern developed. In general, those groups and individuals who supported the administration, sat on the right hand side of the center aisle, their opponents on the left.

Prior to the election, the "A" occupation members had pulled a weight well out of proportion to their numbers. Although they comprised but five percent of the membership, they provided twenty percent of the attendance and twenty-five percent of the executive committee. As might be expected, they sat at the front, right hand side of the room. Their faction was badly defeated in the elections and they lost both representatives which they had on the executive committee. Within three months after the election, their attendance had fallen to five percent and they were now sitting at the back of the room.

It soon proved profitable to supplement these observations of where

people sat with additional material showing with whom they talked (or interacted). Four types of interaction were noted, none of which required any knowledge of *content* of what was said.

1. The observer made it a point to get to meetings well before they started. This made it possible to observe how the members arrived, whether alone, in twos, threes, or fours. This same process was repeated after the meeting was over.

2. While waiting for the meeting to start, the members gathered in small groups, often around one person who seemed to be the center of attention. There were similar groupings in the hall and in the bar across the street after the meeting was over.

3. Notes were kept on which members moved around a lot during the meeting and also the patterns of whispered conversation.

4. Finally, an observation was made as to how often different members would get up to address the meeting as a whole.

Through this type of analysis, it was possible to distinguish a number of types of "meeting attenders."

In the first place, there were a number of people who constantly circulated around the hall, before, after and during the meeting. When they talked, they would usually be surrounded by a group. Individuals would seek them out to talk to; on the other hand, when they went to talk with somebody, it would be with a group. On occasion, two such individuals would talk together—in most such cases, they would move away from the other members and talk in private.

Of course, in most cases, the observer already knew that these were union-wide leaders. Some were officers or members of the Executive Committee. Others merely had broad political support throughout the local. In general, the extent of their support could be measured by the number of members they talked to—or even more, by the number who talked to them. Thus changes in the number of their contacts (or interaction) gave a valuable indication as to the rise and fall of political strength. In some cases, this confirmed the information received from other sources. In others, it provided additional questions to ask. The general "scuttlebutt" was useful in telling when a leader was losing strength, but behavior at the meeting gave excellent clues as to which groups were deserting him.

If the number of members talked to is a measure of leadership, perhaps interaction between leaders is a measure of party solidarity. During a period of time when party lines were strong, there was considerable interaction between leaders within a party but little between parties. Since the

party lines shifted rapidly, these "patterns of whispering" often gave strong clues as to changes since the last meeting.

Those who came into the meeting hall with the leader were often there because of their personal loyalty—unless they were the leaders themselves. Some leaders would arrive at the meeting alone, but others would come with a group of followers. This distinction alone was useful. However, the category of "leaders' followers" made up a significant group within the meeting. Frequently these were men who attended only because the leader asked them—often they were men who worked in the same shop as the leader or lived near him. These were the fellows with whom the leaders would go drinking after the meeting was over.

Normally a leader would start a meeting sitting with his followers. Of course, if he was a union-wide leader, he would spend much of his time moving from group to group throughout the hall, but he always "left his hat," literally or otherwise, among his followers.

If the same group of men arrived at the meeting together, sat together and left it together, it was usually safe to assume that they came from the same department and had special interests in common. In almost every case, further information confirmed this. Some of these groups were interested in only one specific item of business—and would leave as soon as it was handled. Thus, about half-way through one meeting the President announced, "The officers have nothing to report on negotiations" (about a wage increase). About half the members left in the next ten minutes. The analysis of which members left and from which departments they came was very suggestive as to which groups were most "militant" about wage increases.

Each one of these groups had its own informal leaders—although these were not easily recognized at first. Often they sat near the middle of their group and were the centers of whispered conversation. Furthermore, they were the only ones to address the meeting as a whole and were the ones with whom the union-wide leaders talked.

At least two sorts of individuals sat in the meetings alone and rarely engaged in informal conversation. However, these could easily be distinguished. Some took an extremely active part in discussion on the floor. These were the "crackpots" (as they were called) or "isolates," men who wanted to become leaders, but seemingly lacked the social skills required. The other group was much quieter. It required intensive interviewing to find that a majority of them conceived of their role as that of a "department representative." Many of them were stewards who felt it was their

duty to attend the meeting in order to find out what was happening and to be able to report back to their own department.

In conclusion, direct observation of patterns of conversation and sitting proved extremely suggestive indicators of basic changes in the political and social life of the union. These were obtained under conditions where socio-metric questionnaires could not be easily used.

In spite of its many limitations, this approach may provide a valuable check on information gathered through other means. For instance, it might well make possible a comparison of paper and pencil replies with the way a person actually performs in the real life situation. It may also facilitate the identification of cliques, isolates, ascendency patterns, and other social phenomena.

Its chief advantage is the ease with which crude but useful data can be obtained.

CURRENT TRENDS IN SOCIOMETRY

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I.

In recent years five centers of research in experimental design have developed which have given attention to a sociometric orientation. The first in line was the original Sociometric Institute (now Moreno Institute), formally established in 1942, which grew out of small committees since 1934; next in line was the Research Center for Group Dynamics at the Massachusetts Institute of Technology, formally established in 1945; the third was a group of workers within the newly established Department of Social Relations at Harvard University in 1946; the fourth was the Tavistock Institute of Human Relations in 1947; the fifth, the recently established Laboratoire d'Experimentation Sociometrique et Psycho-Sociologique at the Sorbonne. There are other units on the way promising rapid crystallization, as within the Department of Sociology at New York University. There are several centers of sociometric research which are outstanding in field work rather than laboratory experimentation, to mention, e.g., two among them: the team of workers at the University of Seattle, Department of Sociology, under the leadership of George A. Lundberg, the other at the Michigan State College, under the leadership of Charles P. Loomis. These research groups have a common bond, as they were all anticipated by the New York Institute, largely employing the same group of methods and techniques and similar theoretic orientation; but they developed these procedures in part along different tracks, each under independent leadership. It is the purpose of this discussion to point out that the source and the goal of the various research centers are the same, however different the semantics and the form of experimental design used by one worker or another.

The first question which is still puzzling many is: when does "scientific" thinking begin? The line between scientific and non-scientific thinking cannot be sharply drawn; if we should limit, for instance, scientific thinking to the formulation and testing of hypotheses we may assign a large volume of research of little value to "science" and the most powerful and productive thinking to "non-science." This division does not make sense. What differentiates scientific from non-scientific behavior are the inital steps, the direction and the "goal" of the undertaking. The consensus is growing that scientific thinking embraces all phases of an idea, from its first flashes

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through the stages of crystallization up to a principle which is universally accepted.

The policy of SOCIOMETRY has been since its inception to sponsor a most flexible approach so as to permit every possible experimental design a place in the sun. Two general requirements are here set forth as our mentors: 1) the experimenters should demonstrate, in their reports of experimental research, a discriminating sense in the construction of hypotheses to be tested, that they are searching for an *hypothesis of "choice"*. They should demonstrate full knowledge of the theoretical involvements of the techniques used by them; otherwise they may be accused of ignorance or, which is worse, tempted to formulate generalizations which are unwarranted; 2) the experimenters should be aware, not only of the variety of techniques they are actually using for a specified purpose, but have experience with the related and modified techniques in that area; otherwise they can ill afford to use for that particular task the techniques they are using. It is a desideratum that there must be for a particular hypothesis a *technique of "choice"*; this technique of choice must be pointed out and compared with other techniques which might have been used.

These requirements may be illustrated further by reminding the experimenters that they should master the principles of material inquiry of sociometric theory; for instance, they should know what it means in theoretical terms, a) to add or leave out criteria in a sociometric test, b) to extend or limit the number of choices allowed, c) to extend or limit the number of rejections allowed, or d) to leave unrestrained or limit the spontaneity of the individual in the expression of choices and rejections; in other words, to assess adequately the effects which a relatively contrived sociometric test has upon the results. What is said here about the sociometric test is equally important for the setting up of contrived situational tests and psychodramatic experiments; for instance, what consequences it might have for the results of, a) the *actors* are entirely excluded from the setting up of the experimental design, or b) if they are excluded only from knowing the factor which is under examination, or c) if the *observers* are entirely or partly excluded from the setting up of the experiment, or d) if they are indoctrinated into the meaning and objectives of the experiment or whether they are purposely left ignorant of them or e) if the *director* of the investigation has been tested or not as to his sensitivity for the experimental problem and f) if he is aware or unaware of the "immediate" dynamics involved in the spontaneous interaction of the actors used in the experiment, etc.

An important aspect in the current trends in sociometric reasearch is

the development of "vehicles" for experimentation which in itself marked a revolution in laboratory design. All "sociometric laboratories" (all laboratories may be called sociometric if engaged in sociometric test- and small group-research, interaction analyses, situation tests, psychodrama research, etc., in contrast to "sociometric field work"), have the following vehicles in common: a) an actorial vehicle of some sort, that is, a place for the actors and where the actors operate. The idea of such a vehicle, consciously constructed for "research" aims, was first used in the laboratory of the Viennese Stegreiftheater.* This may be a regularly structured stage as at the Theater for Psychodrama at the New York Institute or like the one at the Psychological Laboratory, Harvard University, or it may merely be a platform or any space clearly separated by some designation for action, an architectural correspondent to the concept of an actor's world; b) an observer's or spectator vehicle, a spot especially designated to give the observers special sites; it may be an audience of observer-spectators, as in a Theater for Psychodrama. The audiences in a Theater for Psychodrama may have certain places set aside for specialized observers; the observer may have his position in front of the actorial vehicle or hidden behind a screen; c) sound recording devices,** open or hidden, other mechanical recorders like motion pictures, or human recorders like stenographers or stenotypists.

These various developments in sociometric research are seen from the higher platform of their overall objectives, beyond the differences in semantics and emphases. The comments and criticisms which are forthcoming in this limited survey are made forthright, without mincing words; otherwise they would not be helpful to the experimental investigators. We do not have any bias for one or another development now in progress, as, beyond hunches, we do not have any certainty as to which of them will prove to be the most productive in the end.

II.

One of the difficulties in the development of sociometry has been the rapid assimilation of its techniques, operations and methods and the parallel ignorance of and resistance against its theories. This has proven to be unfortunate, not only for the formulation of significant hypotheses, but also for the further refinement of the techniques themselves. One could follow with amusement how rapidly sociometric techniques such as the sociogram,

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*See "Das Stegreiftheater", 1923.

**The use of "sound" and motion picture recording devices for the objectification of psychological and social research was first advocated by me in 1932.

the sociometric test, small group analysis, role playing, psychodrama and sociodrama were taken for granted *as techniques,* but their theoretical background, the concepts of the actor in situ, the alter or auxiliary ego, spontaneity, creativity, tele, warming up, social atom, psychosocial networks of communication, sociodynamic effect, etc., were taken lightly, ignored or smuggled into literature without reference to the source. This would not be so serious if these hypotheses would have developed independently from sociometric techniques, but as it is they developed and they were imposed by empirical evidence; they have been the result of rigorous thinking in working through the material gathered. This circumstance is unfortunate for yet another reason. The theories and concepts which I introduced do not only give important clues for significant hypotheses, they are also important *prerequisites* for the proper use of the techniques and for the setting up of productive experiments. Especially in the early phases of a young science one cannot neatly differentiate technique from theory but this is exactly what happened frequently in reported field work, techniques were separated from their meaning and used mechanically. In disregard of theoretic considerations some workers began to make sociograms in a sociological vacuum, asking people like in a parlor game whom they like and dislike and then drawing the lines between them. Others began to introduce role playing as a "cold" research design, as if it would be possible to manipulate human beings like guinea pigs.

Of the several directions of research initiated by sociometry five areas of experiment and conceptualization have aroused particular interest in recent years; one is group dynamics, the second is interaction analysis, the third is sociometric perception, the fourth is the theory of action and the fifth is the formation of groups in statu nascendi. They are all commendable extensions and encouraging signs of spreading effort to enlarge our experimental equipment and to combine it with a large theoretic framework, but they have certain shortcomings in common: a growing withdrawal from social reality, due, it seems, to a lack of imagination to translate the actual conditions of the group into experimental design and theoretical formulations and to an inability to operate with abstractions within the extremely concrete. Certain students, following the model of older sciences break up the concrete social situation into an indefinite number of little problems, each to be exposed to experimental investigation. This sounds like good scientific laboratory logic but the difficulty is that when these little pieces are broken away from their social context they lose the significance they had in situ. What one studies then is not the material in its living

form but in various stages of distortion or disintegration. Who is going to tell us post festum whether the processes tapped in the contrived or reduced experimental design correspond to some analogous processes in living social action, and where is the mind which will be able to resynthesize the living social aggregate? It is easy to take the dynamic sequence of interactions apart but it is hard to put them together again. I can well understand the despair of the laboratory investigator faced with the complexity of social life, withdrawing from it and parcelling it into numerous problems to examine them separately. "Social life is so complicated," he might say to himself, "we must oversimplify our technique in the hope that the errors made will some day be corrected by the results of cumulative experiments." We can also well see the despair of a theoretician* who goes to the extreme of pulling many contemporary strands of thought together and building a large conceptual system so as to give the experimenter the pigeon holes to which he can return after the hypotheses are tested. It may be comfortable to have a complete system of relationships formulated in advance of empirical testing and to have the hypotheses to be tested handed to one by a scientific god.

One may take an optimistic view and think that having a system, however conjectural, is better than having none, that the social world is far less complex than it looks and that the number of hypotheses to be tested is not as large as one might suspect. But the opposite is just as great, if not greater a probability, that the number of contrived hypotheses which we will go on constructing in a comparative social vacuum will be bewilderingly large, going into thousands of theoretical gadgets. This would have been a fair risk to take before the advent of sociometry but since then we have several tracks to travel on and a compass to guide us; theory and practice can be combined with a fair degree of safety. Let us not construct—at least for a while—more theory than we need for the voyage, let us not continue the voyage beyond the point to which the theory has chartered the way. We have hardly begun to travel a little more safely than heretofore on an unchartered social sea. Do we still need as badly as in the past the breathless riders charting formalized systems of hypotheses far in advance of action? They may distract the captain's mind from the task ahead into dreams of distant shores. It boils down to the well-nigh classic difficulty which one encounters when setting up group and interaction experiments in which human beings are the essential protagonists. It may be appropriate to assume the allures of the puristic, detached scientific investigator in a more

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*Talcott Parsons.

advanced stage of a science, but in a science which has hardly started to walk, such allures are unfortunate and unproductive. One can appreciate the need to get an experimental design simplified in order to obtain data which can be easily manipulated. Such manipulations are acceptable in an advanced science like physics or chemistry where there is a sufficient backlog of well established knowledge so that a trespass is easily recognized; there are danger signals which stop the experimenter if he is on a false track. Imagine for a moment that Freud would have started with the study of association technique in a psychological laboratory instead of in the comparatively human situation of "the medical office." The result would have been a distinguished and elaborate scientific corpse. We are, in group research and interaction dynamics, in a similar position today as psychodynamics about thirty years ago. Until recently we had only two alternatives, the clinical method, maintaining the contact with social reality, however primitive the analysis of the scientific data might have been, or the laboratory method, overly scientific but sterile. (The other day I heard a brave clinician exclaim: "We have made a good start with psychodrama, sociodrama, role playing, but where are these Harvard students taking us?") But now we have a way out, a third alternative between these two extremes, the inhumanity of the experimental laboratory and the overhumanity and magic of the medical office; this way out is the sociometric revision of the experimental method. It has been my tendency, therefore, as much as possible to approximate in the construction of an experiment the life situation itself and even brazenly to *magnify* rather than to reduce its complexity. I could then afford to build my theoretical framework in such a manner that it did not lose contact with social reality. Some of the safest achievements of sociometry have come about this way; take, for instance, the deviation from chance study of social configurations or the study of spontaneous and planted rumors and the consequent formulation of the network and communication hypothesis, significantly applied by Charles P. Loomis* and recently confirmed.**

III.

a) Group Dynamics

Sociometric research and conceptualization has had a beneficial effect

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*See Loomis, Charles P., and Davidson, Dwight, "Sociometrics and the Study of New Rural Communities", *Sociometry*, Vol. II, 1939.

**Festinger, Leon, Schachter, Stanley, and Back, Kurt, *Social Pressures in Informal Groups*, Harper & Brothers, 1950.

upon the construction of experimental design; the designs have become more lifelike and more rewarding. But the traditional cultural lag of the academician and the old time laboratory experimenter is by no means resolved in the new sociometric laboratory. It may be helpful to demonstrate this point with recent work. There are two current deviations from these *sociometrically adequate* experimental designs, the *contrived* experiment, the limitations of which are known, and the *ill-designed* experiment of whose limitations the investigator himself is unconscious; it is ill-designed because of its poor analytic preparation. A good illustration is Lewin's experiment with democratic and autocratic atmospheres which I have confronted elsewhere with an earlier experimental design of my own, dealing with the same problems. The question I tried to answer in my own mind was: which direction of research is more productive? Upon analytic examination I concluded that Lewin's approach is logically more elegant, but falls short in its prerequisites, it is an eye-wash. He made two errors; he failed first because of insufficient material inquiry into the sociometric situation. With the advent of sociometry the group as a dynamic structural unit was discovered. In the equating of the two groups preparatory to the study of the two atmospheres, this had to be taken into account. As the equation was inaccurate, the very foundation of the experiment was shaky. The second error in design was that the one who was supposed to take the part of the autocratic leader may have been better suited to being a democratic leader or no leader at all, and the one who was supposed to take the part of the democratic leader may have been better suited to being the autocrat; no one knew. In other words, the assignments most important for the development of the two atmospheres had been made without the necessary selections, classifications and role preparations. My experiment, on contrast with this, was done naively, without any pretense of logical elegance; but we had direct, empirical evidence that the housemothers, by inclination, appointment and operation played authoritative roles towards their wards in the cottages and that the sociometrists counteracted with democratic roles.*

b) Interaction Analysis

Let us also take a look at the work of Robert F. Bales.** Whereas

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*See Moreno, J. L., "Experimental Sociometry and the Experimental Method in Science", in Current Trends in Social Psychology, 1948, Edited by Wayne Dennis, published by the University of Pittsburgh Press, Pittsburgh, Pennsylvania; see also, *Sociometry, Experimental Method and the Science of Society*. Beacon House, 1951.

**See Bales, Robert F., *Interaction Process Analysis, Addison-Wesley Press, Inc., 1950*. The above comments are strictly limited to *this* publication of the author.

Lewin's errors appear openly, Bales' errors are hidden, he leaves certain prerequisites unanalyzed and undiscussed. As the interaction studies by Bales have admittedly been stimulated by group psychotherapy and role playing situations, let us compare the method described by him with the procedures in a typical psychodramatic situation. Bales reports "The observers appear to be looking through windows; these are a row of three one-way mirrors. In the room on the other side of the glass is a group of people engaged in solving a chess problem. They know that they are being observed; that is, they have been told that the mirrors are transparent from the other side and that the observers there have sound recording equipment. The observers, however, are not visible to the subjects. When the subjects look, they simply see themselves reflected." The observer has a set of categories before him and scores.

The method as described up to this point does not differ from certain psychodramatic experiments as we have executed them and the technique of interaction analysis is similar to the one used by me in my Stegreiftheater experiment* and continued in Hudson.** It is not pertinent to the method whether the observers are visible or not visible to the subjects. The difference is in what Bales does *not* tell us about the subjects or what he does *not* know or consider important; we do not receive a self-evaluation of the actors in action. We understand what significance the situations have for the observer, he is anxious to see whether the interactional behavior of the subjects fits into a set of categories he has constructed. But we are not told and we do not know whether the situations have any *significance for the actors.* How do the actors get into the Harvard laboratory? Are they total strangers to each other? Or are they acquainted? What is the criterion of their selection? We are told that they are engaged in solving a chess problem. Are they chess players? Are they skilled or unskilled at chess? Is competence in chess playing a criterion in their selection? Why should they play chess? They may not be warmed up to it; they may be warmed up to taking a stroll in the garden, smoking or drinking coffee, dancing or getting into a heated argument over baseball. Who decides what they should do? If the situations are structured for the actors in advance, we are not specifically told that they are. In contrast to Bales' procedure, the experimenter in a sociometric situation would give us as complete a picture of the actorial setting as possible, comparing in completeness the picture of the observers' setting. He would tell us what the relationship is between the situation and

*Das Stegreiftheater, 1923.
**See *Who Shall Survive?* 1934, p. 169-196.

the actors. Are they hired, professional alter egos, or volunteers? Are they students or patients who have problems of their own to solve? In other words, the sociometrist or psychodramatist does not limit his concern to the observer and to *his* objectives. He is as much concerned with the actors and their objectives. The spontaneity states of the actors, their warming up, the differences in warming up from act to act are foremost in his mind. It is fundamental for research reasons that we are fully cognizant of the external and internal setting in which the actors themselves operate. Further, *after he knows of the total situations of the actors, he may be in a better position to "parcel out" one or another special problem for experimental design*; he may parcel them out more intelligently. In Bales' method, the observer resembles too much the totalitarian observer in animal experiment. In the sociometric and psychodramatic situation he is only a *part* of the whole setting. Bales is particularly worried whether the scoring is done correctly by the observers; the actor's world he treats as if it would be outside of his orbit, as an indispensable evil. It is a science of the observer, it is not a science of the actor and of action. It is the observer's and not the actor's frame of reference, it is an experimental design to suit the observer but not to suit the actor. This criticism by no means invalidates the possible value of Bales' categories, only experience will tell us whether they give a meaningful interpretation to the interaction process of any two people.

This criticism serves merely to point out that Bales operates crudely, with an *incomplete* theory of action and *without* a theory of spontaneity, without giving research status to the actor-subject. At this stage of the development of action and group techniques an *incomplete* theory of the actor is a serious shortcoming of experimental design. It can easily lead to an ill-designed experiment and to analytically ill-considered generalizations.

c) Analysis of Sociometric Perception, An Extension of Tele Theory

Ten years ago (1942) I described a version of the sociometric test* which I called "sociometric selfrating", but which may better be called a "sociometric perception test". The individual goes through several steps.

First step: the individual "sketches out all the situations in which he is involved at the time and fills in all the individuals who take a part in them and in which role."

Second step: "he tries to clarify for himself how he feels towards each

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*See Moreno, J. L., "Sociometry in Action", *Sociometry*, Vol. 5, 1942, p. 301, 305. All quotations describing the test are taken from this article.

of these people. He pretends that he is taking part in a sociometric test and chooses or rejects them according to preference and rank, giving his reasons."

Third step: "he makes a guess what everyone of these people feels towards him and what reasons they might have."

Fourth step: "he guesses how these individuals may be related to each other."

Fifth step: "after he has finished his own selfrating he may ask another person familiar with his situation to rate him independently."

Sixth step: "the validity and reliability of data from sociometric self-rating can be determined by giving to a group of individuals an open sociometric test immediately after they have rated themselves. Thus, the individual's intuition of his sociometric status can be compared with the objective facts of others' expression towards him, e.g., his actual sociometric status."

I made extensive studies with this test.* The technique has recently been followed up by Paul Maucorps** and more extensively by Renato Tagiuri.*** This trend in sociometric research focusses on an aspect of tele theory which has been little explored to date.

We have known for some time that tele has, besides a *conative* also a *cognitive* aspect and that both enter into the choices and rejections made. But there never was an instrument which could tap the cognitive factor exclusively. "In young children's groups, . . . after they have developed the *ability* to click with one partner, this partnership does not remain a singular case, but similarly they develop the *sense* to click with other persons who like themselves have developed a similar sense for inter-personal choice."†
Paul Deutschberger‡ comes to the following conclusion in a suggestive article: "Tele does not operate equally throughout the totality of an individual's social atom, but consists of an horizon in which awareness is

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*To be published in SOCIOMETRY, Vol. 15, No. 3, 1952.

**Maucorps, Paul, "Sociometric Inquiry in the French Army", *Sociometry*, Vol. 12, 1949.

***Tagiuri, Renato, "Relational Analysis: An Extension of Sociometric Method with Emphasis upon Social Perception", elsewhere in this issue. See also Lundberg, George A., and Dickson, Lenore, "Inter-Ethnic Relations in a High-School Population", *The American Journal of Sociology*, Vol. LVIII, July 1952, pp. 1-10; and Riley, Matilda White, "Scales Applied to Dyadic Relationships", elsewhere in this issue.

†*Sociometry Monograph*, No. 3, p. 21.

‡Deutschberger, Paul, "The Tele-Factor: Horizon and Awareness", *Sociometry*, Vol. 10, 1947, p. 249.

great, level of choice expenditure high, and perception of inter-relationships accurate; and an unstructured region, marked by tentative and token choices to which reciprocation is hit-or-miss." . . . "The area between the chance level and the tele level wherein drives for acceptance and misperceptions about the role of the recipient may cover a range of pathological interpersonal relationships." In accord with this, therefore, I subdivided the area between the tele level and the pure chance level into the infratele (farthest from chance), empathy and tranference levels.*

I frequently encountered in the sociograms individuals who receive a large number of choices but whose own choices remain unreciprocated; as a consequence, they feel isolated and lonely. In the analysis of such cases one finds that they operate in their choice-making with a high feeling of affection for the individuals they are choosing, but with little awareness as to their feelings towards him; they have also little awareness for the individuals who chose them but whom they do not choose. It appears that at the time of making important choices their conative tele is high, their cognitive tele is low. I submitted such individuals to role testing in sociodramatic sessions and discovered that their *perception* of the *social roles* in which the individuals chosen by them performed, was weak, out of proportion with the feeling of admiration and awe they had for these statuses and roles and for the individuals embodying them. In other words, they disclosed a disturbance on the role level, a high level of *role enactment* versus a low level of *role perception*;** parallel to the conflict shown on the interpersonal level, a high conative tele versus a low cognitive tele.

When I introduced the selfrating test I calculated that if the perceptual intuition of such individuals could be awakened and trained, their choices would be more adequate and their sociometric status would improve. I was able to verify this hypothesis in a large number of cases.

Tagiuri modified my original design by giving the actual sociometric test and the perception test simultaneously and by leaving out sociometric criteria. From the point of view of developing sensitive perceptional responses the simultaneous giving of the test may have certain disadvantages, the "warming up" to two separate focii at the same time may be confusing. The one test is of an autistic, imaginational, autonomous nature, the other is of an objective, realistic and collaborative nature. It is difficult for subjects to switch at the same time from one focus to another; a pause for reorienta-

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Sociometry Monograph, No. 3, p. 25-27.

**Moreno, J. L., and Moreno, F. B., "Role Tests and Role Diagrams of Children", *Sociometry*, Vol. 8, 1945.

tion is needed. Experience with large samples of individuals should enlighten us which of the original designs is more productive, to give the two tests simultaneously, to give the guess test separately from the real test, one immediately following the other, or to give the perception test alone.*

A pitfall of the sociometric perception test, as in real sociometric tests, is the neglect of giving the subject appropriate material instructions, by not warming him up adequately to the situations he is to evaluate and perceive. I found that if the subjects omit the first step in the instructions outlined above, his responses will be poorly focussed. If he does not visualize the *criteria* of the situations in which he chooses to interact with certain individuals, the meaningfulness of the results threaten to be reduced and a comparison with the results from actual sociometric tests may become inaccurate and, to an extent, pointless.

It can be hypothecated that the greater the sociometric distance of an individual is from other individuals in their common social space, the more inaccurate will be his social evaluation of their relationship to him and to each other; he may guess accurately how A, B, C whom he chooses feels towards him but he may have a vague perception how A feels about B, A feels about C, B feels about C, B feels about A, etc. The day may come when, through cultivation and training of many generations in the conation and cognition of tele, in role enactment and role perception, we will be able to penetrate the social universe by standing still, without moving into it, and communicate with individuals at a distance without meeting them physically, attaining the effects of extrasensory perception without an extrasensory function.

d) Theory of Action

Out of the "action-centered" climate of this generation which sociometry and sociodrama have helped to prepare theoretic schemes of action

*I have constructed, similar to the sociometric perception test, a *psychodramatic perception test*; it may also be called an "action perception" test. In the first phase the subject is asked to outline a series of crucial situations which he expects to experience in the course of a given time (the next twenty-four hours, a week, etc.), a meeting with his wife, his employer, his child, etc. He is to describe how he expects to act in these situations and how he expects these individuals to act towards him. In the second phase he may be asked to act out the situations *without* auxiliary or alter egos, that is, *acting all the parts himself*, presenting the conflicts which may ensue and the solutions which are offered by himself or by his coprotagonists. Whereas the sociometric perception test focusses on the perception of feelings the psychodramatic perception test focusses on the *perception of action and interaction*.

have grown which seem to fulfill many expectations. Fragments of a theory of action are scattered throughout many of my publications, but I have never focussed them into a special book exclusively dedicated to it. Because of my seniority in the field of action theory and action technique—and as sociometric theory grew out of my early preoccupation with a science of action—it may be of value to compare Parsons' recent and elaborate effort with my own position. This does not pretend to be a critique of Parsons' scheme, it is a critique *restricted* to the *initial* phase of such constructions and insofar as it reflects upon some current trends in sociometry.

I found that going back to the origins, the status nascendi of a work of art or science, is a fruitful way of learning many things about its end result. This is particularly true about theoretical schemes which frequently emphasize their "withdrawal" from empirical reality by saying that they have no direct bearing upon empirical generalizations, nor upon methodology. But, similar to works of art, theoretical schemes do not emerge after a mere first "throw", they are worked over again and again so that their status nascendi and many of their early stages become unrecognizable; they are hidden from visibility, they have been censored and erased, only the final product is left over for public inspection and judgment. If the theoretical scheme is a flawless product of construction like Clark Maxwell's generalizations of electro-magnetic theory—which Hertz could use as stepping stones and prove their usefulness for experimental research soon after their formulation—a voyage "a la recherche du temps perdu", back to the "trauma" or "victory" of birth is not necessary. But when a theoretic scheme is suspect of flaws in its basic construction—Kierkegaard's critique of the Hegelian system of philosophy is an example—it is worthwhile to look at the sources from which the theoretical scheme drew its blood. Parsons' scheme appears to have been particularly stimulated by two types of sources; the stimulus from one is admittedly the work of Weber, Durkheim, Pareto and Freud. Considering that this theoretical scheme is an action scheme, it is interesting that the authors upon whom he builds his own system are genial observers but certainly not genial actors. The second type of source which can be suspected by a connoisseur, but which is hidden as the references to them are nil or scant, is the empirical and action research of his contemporaries. One could judge that they may have been the greatest immediate influence so that the scheme almost appears "as a theoretical epi-phenomenon, an academic abreaction to current action research." If a theoretic scheme is successful in synthesizing many older theories into a more inclusive system this is a great achievement indeed. In that area Parsons' effort is always

interesting, in parts brilliant; but where he tries to swallow the social and action research of our generation, there he is deficient. He might have been wiser to call his social system "A General Theory of Behavior" instead of "A General Theory of Action." But let us examine two of his basic references, 1) a science of action, 2) a "relational" system of its branches, theory of personality, theory of culture and theory of social system.

A science of action begins—as I have suggested on occasion—with the fundamental difference between the world of organisms and the world of actors, the organisms-in-environment versus the actors in situ. But a science of action which postulates, as Parsons does, that organism *equals* actor and behavior *equals* action is a science of action in name only. The equalization of actor and organism is not merely a matter of semantics, it is a perversion of significant terms and further a crucial block in the advancement of an experimental methodology in the social sciences. How does a social experiment start? It does not start with organisms, behaviors and cathexes; such is the view of observers and spectators. It starts with "you" and "me", with meetings and encounters, with actors and counteractors. It does not start with "he" and "she", with "interpersonal relations" and the world of the "outsiders". A science of action begins with two verbs, to be and to create, and with three nouns, actors, spontaneity and creativity. A collective of actors has a different meaning than a collectivity of organisms, it is a "we", not a "they", it is a "creatocracy", not a universe of interacting organisms. An illustration for the confusion of the two categories is the following definition: "The individual actor is a name for the same concrete entity as the organism . . . ." "A science of action, then, is a system of the relations of organisms in interdependence with each other . . . ." "It is in order to keep this system distinct from the organisms as a physicochemical system that we prefer, instead of referring to the 'behavior of the organism' to speak of the 'action of the actor' and instead of using the term environment to speak of the 'situation of action'."* This admittedly only renders lipservice to the "action of the actor" and to the "situation of action", a theory of "pseudo" action and "pseudo" actors, a behavior and organism theory projected into the tripartite system, Personality, Society and Culture. It is urgent that the relation between organism and behavior on one hand and between actor and action on the other be clearly differentiated. The actor's "actings out" and the "data" or interpretations of the observer are treated as if they were identical—they may be supplementary but they are not

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*See Parson's, Talcott, The Social System, The Free Press, p. 543, 1951.

identical. *An action matrix registers acts and events, a behavior matrix registers "observations" of acts and events.* In the primary phase of a theory of action this dilemma is serious, it produces an unnecessary twilight and confusion. Sheldon*, for instance, states, ". . . the abstraction from the organism is the *actor*." This would be a logical definition for one who develops a theory of organism and behavior; within *his* framework the organism comes first, the actor comes second; but in an action theory the situation is reversed, the collectivity of actors in it comes first. The definition should be therefore: *the organism is an abstraction, an abstraction from the actor, and behavior is an abstraction, an abstraction from the act.* I agree that we should keep, for methodical reasons, the organism as a physicochemical system distinct from the organism as a behavioral system. But we should keep, for methodical reasons, the actorial system of the human group distinct from its behavioral system. In order that this cleavage should be truly overcome some day a psychoanalytically oriented behaviorism will be replaced by metrically oriented actionism based on interaction productions of the psychodrama type. The actor must become an observer of himself and an actor towards the observer, i.e., the observer must become an actor towards the observed and an observer of himself; one must co-act with the other, a meeting is taking place. In an ongoing socio-psychodrama the subjective view of the actor and the objective view of the co-actor are one, they are on the same plane. Indeed, as alter or auxiliary egos to each other on the plane of action the degree of their reciprocal subjectivities and objectivities are continuously in a process of mixture; A acts towards B, B acts towards A; A observes himself as he acts towards B, B observes himself as he acts towards A; A observes A, B observes B; A observes A *and* B, B observes B *and* A; A acts towards C, A acts towards B *and* C, C acts towards B *and* A, etc. A genuine theory of action and actors deals with actorial categories and interaction potentials like spontaneity, creativity, the warm up, the moment, the meeting, alter or auxiliary egos and other categories which express the co-experiential level of an actor's world on the level of action.

The "relational" system binding actors and the relational system binding organism into a unitary process are of a different order. The actorial system is based on a consensus which exists only within the collectivity of actors. This secret, internal consensus can be "objectified" with the *research aid* of the actors and used by the observers of the behavior of such a collectivity of

*Sheldon, Richard C., in Talcott Parsons and Edward E. Shils, *Towards a General Theory of Action*, Harvard University Press, 1951, p. 31.

actors, to supplement and amplify the system they are developing from behavioral cues. *Frequently even the aid of the actors is not sufficient, the observers have to become members of the actorial collectivity themselves in order to get the cues from the inside, from their own existential participation in the process.* The collectivity of actors is also not identical with the point of view of any individual actors, just as the collectivity of interacting organisms is not identical with the behavior of any individual organism. A total systematization of a theory of action as a social system is a formidable task but it *requires, before theorizing, some existential prerequisite, for instance, a living and reflecting through a long series of psycho- and socio-dramatic sessions, dealing with a variety of socio-cultural contexts.* A psycho-analytic experience on a couch is not sufficient. The theoretical god has to come down from his high horse and become a co-actor, either on the socio-dramatic or on the "socio" existential level. A system of personality—a science of society and a science of culture—without being founded on a theory of spontaneity and creativity, is worthless. It starts and ends with a blind alley; this is the fate of all negative analytic systems like Freud's and those of all his, however distant, descendants.

Parsons' system is really a theory of behavior and not a theory of action. It is deceptive because it puts negative and analytic concepts into the costume of a positive and productive terminology, a conservative theory into a bold language. He is not sufficiently conscious as to what has happened in his own backyard—the emergence of sociometry with its study of the dynamics of small groups and its interaction analysis, role playing, psycho-drama and sociodrama, and their theoretical implications; he is unaware of repressing the concrete empirical and experimental research which his con-temporaries are *doing* around him. He does not see the actor as a doer, he sees him as an analyzand on a couch or as an embalmed corpse in a morgue; therefore, instead of starting the social system with actorial categories, spontaneity-creativity, warming-up, acting-interacting-co-acting—he starts with observer and spectator categories, with residues and cathexes, with internalization and externalization dynamics. The entire concept of a social system of action is deficient in its very starting point, it is constructed without foundations, it hangs in the air, largely due to a neglect of spontaneity-creativity theory which must be reflected upon before a social system inter-relating culture-society-personality can be built.

e) Formation of Groups in Statu Nascendi

Since the early days of sociometry the questions: "What is the structure of *new* groups?" and "What factors enter into their formation?" has been an object of inquiry. In my Parent and Family Tests* I could observe the profound effect of the first meeting upon sociometric choices and decisions and the rapid formation of group structure. Roger Barker** made a more systematic study of this problem. It is significant that in recent years the formation of groups in statu nascendi again arouses the attention of sociometrists. Particularly revealing is a French study "Selectivity and Propinquity"*** which points out the high degree of indifference shown by members of a group as to who are their partners in a specific situation. As the atmosphere of that study is highly informal one would expect a considerable amount of spontaneity and tele operating in their choices and rejections of partners.

Here follow some of the hypotheses which old and new researches in this area suggest. 1) The structures of groups formed by total strangers deviate from chance and show a fair degree of organization and cohesion from the start. 2) "Unstructured" groups apparently do not exist. The myth of the unstructured group has come into sociometry from the Gestalt and topological schools whose contribution to group research has not been an entirely unmixed blessing. 3) The structure of groups formed by total strangers is influenced by the structure of the groups from which the individual members came; there is a carry-over. 4) An extension of hypothesis 3 is the following one: Social stereotypes or social conserves exercise an insidious influence upon the spontaneous activities and decisions of the members and distort their choices and rejections. 5) The apparent *indifference* and *apathy* frequently found in the choice of partners is of great importance. One of the most neglected aspects of sociometric group research is the dynamics of neutrality. Whereas choice and rejection processes have been studied systematically, neutrality has been persistently ignored although it has been the third member of the original sociometric trichotomy choice-rejection-neutrality. But the effect of physical proximity and propinquity upon interaction is only apparently physical and mechanical; it seems that

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*Who Shall Survive?, p. 269, 1934.

**SOCIOMETRY, Vol. 5, p. 169, 1942.

***See article by J. Maisonneuve et al., p. 135 in this issue. See also John T. Gullahorn, "Distance and Friendship as Factors in the Gross Interaction Matrix", p. 123-134 in this issue.

there is here an old value system influencing interaction rooted in our religious and ethical heritage; it commands: "Try to get along with everyone and accept everyone whom you find in your proximity. Be friendly and try to like everyone whom you happen to meet and who happens to be next to you, your neighbors, your coworkers or your life partners."

Conclusions

A growing number of sociologists, social psychologists, psychiatrists and psychoanalysts is entering the field of sociometry and is bringing to it a profound stimulation. Many of their researches are still in progress and only partly published. They may have, unknown to me, a paper in development which nullifies my criticism. My comments in this paper are, therefore, limited only to the published work of the authors mentioned.

BOOK REVIEW

German Youth: Bond or Free. By Howard Becker. International Library of Sociology and Social Reconstruction. New York: Oxford University Press, 1946; reissued by Norman Paul Press, 1948 St. Joseph Street, Gary, Indiana. xiii, 286 pp. Postpaid $2.75.

The wealth of reviews written after the publication of this work would make another one superfluous had not the editor of the original version, unfortunately, excluded a methodological note which has since been published under the title, "What the Hitler Youth inherited" in *Phylon* (1951, pp. 39-54). Related material has been incorporated in the author's recent collection of essays, *Through Values to Social Interpretation* (especially ch. four). That a historian calls to mind these *addenda* partly seems justifiable by the subtitle of the German adaptation, *Vom Barette schwankt die Feder, die Geschichte der deutschen Jugendbewegung* (Verlag der Greif, Wiesbaden, 1949), unless one objects that, far from being a somewhat presumptuous form of the German term for history "die Geschichte" simply means the story. In this case the reviewer will have to fall back on the fact that he was himself one of Germany's Wandering Birds or Roamers (as Professor Becker's terminology puts it).

The scope of this study can be gauged from the author's later revelation that "the German Youth movement (a construct derived from the study of more than one hundred distinguishable subvarieties) as a constructed type has at least twelve main criteria." A translation of the following outline presented during the Ninth German Sociologists Day will, at least, give a glimpse of the intricate pattern.

1. In spite of the unrest and the symptoms of the rising revolution many more peripheral parts of Germany before 1848 had relatively conservative characteristics which manifested themselves in their value systems and their respective social structure.

2. After 1870 many phases of German life underwent violent changes, and toward the end of the century many people looked back with nostalgy to the good old time which they strongly idealized and romanticized.

3. The contrast between ideal and reality in the nineties led to tendencies among the younger generation that found their outlet in the first phase of the youth movement.

4. This movement, which at first had been very spontaneous, toward the end of the twenties gradually became traditional. One result of this was that the marked difference between youth tutelage and youth movement began to disappear.

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5. The vanishing of spontaneity offered an opportunity for the perversion of the youth movement by the Hitler Youth. This perversion was carried out so succesfully that much enthusiasm which otherwise would have emptied itself into the channels of the youth movement swelled the tide of the Hitler Youth.

6. The present activities of youth lack a goal. Too many heirs of the old youth movement seem to be at work to materialize a good program. The policy of the occupying powers also have no clear objective, since the difficulty of transferring basic forms from one societal group to another have not been mastered.

In tracing his story Becker not only used data collected in years of direct observation and other sometimes rare primary and secondary sources but also his own system of informal interviews. The somewhat loose, if dramatic, presentation of the latter—as the present writer has noted elsewhere—created the impression of semi-fictionizing while, actually, the danger of security restrictions today is recognizable as a motive behind this device. The American public (particularly one that does not consist of specialists) unlike the initiated European reader would have profitted from a sociological identification of each person interviewed.

On the basis of his data the Sociologist of the University of Wisconsin developed his (rather seducing) theory. Experimenting successively with the terms transformation, "perversion" (von Wiese's *Verkehrung*), and diversion Becker showed how youth sects became an *ecclesia,* giving to family contexts the emphasis for which he has been known for years as well as studying the role of individuals. He also predicted future developments with courage though, of course, also with errors which he was the first to point out (cf. his ""German families today" in Hans J. Morgenthau's symposium of 1951, *Germany and the Future of Europe.*

While the German translation is more valuable by containing two new chapters and correcting a few, although not all, factual mistakes, it suffers from the lack of an apparatus (over-developed in the original text) and from a host of blunders in translating the very personal style of the author. This helps perhaps to explain why my German colleague, Werner Conze, in an otherwise sound survey, "Jugendbewegung—politisch gesehen" in the *Deutsche Universitätszeitung* accused Becker's "passionately unjust partisanship", and his absence of "inner freedom" and "Einfühlungsvermögen." To demonstrate that these accusations are essentially unfounded would mean a documentary investigation, "Howard Becker: Bond or Free". "A restudy by someone else is needed" the self-critical author recently suggested. Our suggestion is that a complete English and German version of the *membra*

disjecta now available in print would be preferable both to a polemic and to a completely new start. In the meantime, the work deserves to be read as it is.

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